

## SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Susy Tsang-Foster Examiner #: 76063 Date: 9/3/02  
 Art Unit: 1745 Phone Number 30 5-0588 Serial Number: 09/582,432  
 Mail Box and Bldg/Room Location: CP38A09 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Polymer Electrolyte and Nonaqueous Battery Containing the Same  
 Inventors (please provide full names): Takumi Katsurao; Katsuo Horie; Yukio Ichikawa;  
Aisaku Nagai

Earliest Priority Filing Date: 12/26/1997

synonyms for abnormal linkage:  
 head-head or tail-tail linkage;  
 different-type linkage;

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued parent numbers) along with the appropriate serial number.

Please search for a polymer electrolyte comprising a ~~vinylidene~~ <sup>Vinylidene</sup> fluoride copolymer and a nonaqueous electrolyte (electrolytic) solution, where the vinylidene fluoride copolymer comprises 80 to 97 weight percent of vinylidene fluoride monomer units and 3 to 20 wt% of units of at least one monomer copolymerizable with the vinylidene fluoride monomer and the copolymer has an inherent viscosity of 1.7 to 7 dl/g. please see independent claim 1).

Please also search for crosslinking the vinylidene fluoride copolymer in the above polymer electrolyte of claim 1 (See dependent claim 6).

Please also search for the above vinylidene fluoride copolymer in the above polymer electrolyte of claim 1 where the copolymer has an abnormal linkage content of at least 3% at the vinylidene fluoride sites (see dependent claim 4).

Please also search specifically for a polymer electrolyte comprising a vinylidene fluoride copolymer and a nonaqueous electrolyte (electrolytic) solution, where the vinylidene fluoride copolymer comprises 80 to 97 weight percent of vinylidene fluoride monomer units and 3 to 20 wt% of units of at least one monomer copolymerizable with the vinylidene fluoride monomer where the at least one monomer copolymerizable with the vinylidene fluoride monomer comprises a mixture of hexafluoropropylene and trifluorochloroethylene monomer and the inherent viscosity of the copolymer is 1.5 to 10 dl/g (Independent claim 2).  
 Please also search Examples of the monomers copolymerizable with vinylidene fluoride monomer is shown on page 11 of specification attached

## STAFF USE ONLY

Searcher: K. Fuller  
 Searcher Phone #: \_\_\_\_\_  
 Searcher Location: \_\_\_\_\_  
 Date Searcher Picked Up: \_\_\_\_\_  
 Date Completed: 9/6/02  
 Searcher Prep & Review Time: 40  
 Clerical Prep Time: \_\_\_\_\_  
 Online Time: 45

## Type of Search

NA Sequence (#) \_\_\_\_\_  
 AA Sequence (#) \_\_\_\_\_  
 Structure (#) 3  
 Bibliographic \_\_\_\_\_  
 Litigation \_\_\_\_\_  
 Fulltext \_\_\_\_\_  
 Patent Family \_\_\_\_\_  
 Other \_\_\_\_\_

## Vendors and cost where applicable

STN ✓  
 Dialog \_\_\_\_\_  
 Questel/Orbit \_\_\_\_\_  
 Dr.Link \_\_\_\_\_  
 Lexis/Nexis \_\_\_\_\_  
 Sequence Systems \_\_\_\_\_  
 WWW/Internet \_\_\_\_\_  
 Other (specify) \_\_\_\_\_

=> file reg  
FILE 'REGISTRY' ENTERED AT 17:43:46 ON 06 SEP 2002  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2002 American Chemical Society (ACS)

STRUCTURE FILE UPDATES: 5 SEP 2002 HIGHEST RN 447396-35-2  
DICTIONARY FILE UPDATES: 5 SEP 2002 HIGHEST RN 447396-35-2

TSCA INFORMATION NOW CURRENT THROUGH MAY 20, 2002

Please note that search-term pricing does apply when  
conducting SmartSELECT searches.

Crossover limits have been increased. See HELP CROSSOVER for details.

Calculated physical property data is now available. See HELP PROPERTIES  
for more information. See STNote 27, Searching Properties in the CAS  
Registry File, for complete details:  
<http://www.cas.org/ONLINE/STN/STNOTES/stnotes27.pdf>

=> file hcaplus  
FILE 'HCAPLUS' ENTERED AT 17:43:51 ON 06 SEP 2002  
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.  
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.  
COPYRIGHT (C) 2002 AMERICAN CHEMICAL SOCIETY (ACS)

Copyright of the articles to which records in this database refer is  
held by the publishers listed in the PUBLISHER (PB) field (available  
for records published or updated in Chemical Abstracts after December  
26, 1996), unless otherwise indicated in the original publications.  
The CA Lexicon is the copyrighted intellectual property of the  
the American Chemical Society and is provided to assist you in searching  
databases on STN. Any dissemination, distribution, copying, or storing  
of this information, without the prior written consent of CAS, is  
strictly prohibited.

FILE COVERS 1907 - 6 Sep 2002 VOL 137 ISS 11  
FILE LAST UPDATED: 5 Sep 2002 (20020905/ED)

This file contains CAS Registry Numbers for easy and accurate  
substance identification.

CAS roles have been modified effective December 16, 2001. Please  
check your SDI profiles to see if they need to be revised. For  
information on CAS roles, enter HELP ROLES at an arrow prompt or use  
the CAS Roles thesaurus (/RL field) in this file.

=> d que 193  
L62 1850 SEA FILE=REGISTRY ABB=ON 75-38-7/CRN - vinylidene fluoride  
L63 18140 SEA FILE=HCAPLUS ABB=ON L62  
L64 1644 SEA FILE=HCAPLUS ABB=ON L63 AND BATTER?  
L65 875 SEA FILE=HCAPLUS ABB=ON L63(L) ELECTROLYT?  
L66 680 SEA FILE=HCAPLUS ABB=ON L64 AND L65  
L67 275 SEA FILE=HCAPLUS ABB=ON L66 AND (NONAQ? OR NON(W)AQUEOUS?)  
L68 141 SEA FILE=HCAPLUS ABB=ON L67 AND COPOLYMER?  
L71 91 SEA FILE=REGISTRY ABB=ON 359-11-5/CRN - trifluorochloroethylene  
L72 1402 SEA FILE=REGISTRY ABB=ON 116-15-4/CRN - heptafluoropropylene  
L73 537 SEA FILE=REGISTRY ABB=ON L62 AND (L71 OR L72)

L74 5178 SEA FILE=HCAPLUS ABB=ON L73  
 L76 111 SEA FILE=HCAPLUS ABB=ON L68 AND L74  
 L77 65 SEA FILE=HCAPLUS ABB=ON L66 AND (NONAQ? OR NON(W)AQUEOUS?) (5A)  
 SOLUTION?  
 L78 270 SEA FILE=HCAPLUS ABB=ON L66 AND (NONAQ? OR NON(W)AQUEOUS?) (5A)  
 ELECTROLYT?  
 L79 65 SEA FILE=HCAPLUS ABB=ON L77 AND L78  
 L80 36 SEA FILE=HCAPLUS ABB=ON L76 AND L79  
 L81 381 SEA FILE=HCAPLUS ABB=ON ABNORMAL? (3A) LINK?  
 L82 1 SEA FILE=HCAPLUS ABB=ON L64 AND L81  
 L83 9 SEA FILE=HCAPLUS ABB=ON L68 AND CROSSLINK?  
 L84 45 SEA FILE=HCAPLUS ABB=ON L80 OR L82 OR L83  
 L85 3 SEA FILE=HCAPLUS ABB=ON L79 AND MONOMER?  
 L86 9 SEA FILE=HCAPLUS ABB=ON L79 AND VISCOS?  
 L87 105 SEA FILE=HCAPLUS ABB=ON L68 AND POLYMER? (5A) ELECTROLYT?  
 L88 40 SEA FILE=HCAPLUS ABB=ON L79 AND L87  
 L89 33 SEA FILE=HCAPLUS ABB=ON L74 AND L88  
 L90 45 SEA FILE=HCAPLUS ABB=ON L84 OR L89  
 L91 49 SEA FILE=HCAPLUS ABB=ON L90 OR L85 OR L86  
 L92 51 SEA FILE=HCAPLUS ABB=ON L84 OR L88  
 L93 55 SEA FILE=HCAPLUS ABB=ON L91 OR L92

=> d 193 all 1-55 hitstr

L93 ANSWER 1 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2002:573564 HCAPLUS  
 DN 137:127582  
 TI Gel electrolyte and **battery** using the electrolyte  
 IN Suzuki, Yusuke; Hara, Tomitaro  
 PA Sony Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS C08J003-09; C08K005-098; C08K005-42; C08L027-16; C08L027-20  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002216848	A2	20020802	JP 2001-14961	20010123
AB	The gel <b>electrolyte</b> contains a <b>nonaq.</b> <b>electrolyte soln.</b> and a <b>polymer</b> matrix swollen by the soln., where the polymer is C3F6-vinylidene fluoride <b>copolymer</b> contg. 25-60% C3F6 units. The gel electrolyte may contain 20-200 ppm (of the matrix) dispersed fatty acid or sulfonic acid metal salt. The <b>battery</b> uses the electrolyte, preferably contg. a Li salt electrolyte soln.				
ST	<b>battery</b> gel electrolyte hexafluoropropene vinylidene fluoride <b>copolymer</b> ; lithium salt electrolyte hexafluoropropene vinylidene fluoride <b>copolymer</b>				
IT	<b>Battery</b> electrolytes (gel electrolytes contg. lithium salt and fatty acid or sulfonic acid salt in hexafluoropropene-vinylidene fluoride <b>copolymer</b> matrix for secondary lithium <b>batteries</b> )				
IT	557-04-0, Magnesium stearate 4485-12-5, Lithium stearate. 27479-45-4, Magnesium dodecylbenzenesulfonate RL: DEV (Device component use); USES (Uses) (gel electrolytes contg. lithium salt and fatty acid or sulfonic acid				

salt in hexafluoropropene-vinylidene fluoride **copolymer**  
matrix for secondary lithium **batteries**)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7,  
Propylene carbonate 9011-17-0, Hexafluoropropene-vinylidene  
fluoride **copolymer** 21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(gel **electrolytes** contg. **nonaq.** lithium salt solns.  
in hexafluoropropene-vinylidene fluoride **copolymer** matrix for  
secondary lithium **batteries**)

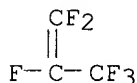
IT 9011-17-0, Hexafluoropropene-vinylidene fluoride **copolymer**  
RL: DEV (Device component use); USES (Uses)  
(gel **electrolytes** contg. **nonaq.** lithium salt solns.  
in hexafluoropropene-vinylidene fluoride **copolymer** matrix for  
secondary lithium **batteries**)

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

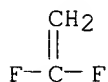
CRN 116-15-4  
CMF C3 F6



*hexafluoropropylene*

CM 2

CRN 75-38-7  
CMF C2 H2 F2



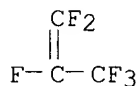
*vinylidene fluoride*

L93 ANSWER 2 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2002:553513 HCAPLUS  
DN 137:127528  
TI Polymer electrolytes for secondary **nonaqueous batteries**  
IN Sugiyama, Masahide; Totsuka, Hiroki  
PA Tomoegawa Paper Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M010-40  
ICS C08L077-00; C08L077-06; C08L101-02  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38  
FAN.CNT 1

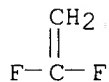
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2002208438	A2	20020726	JP 2001-3203	20010111

- AB The polymer electrolytes contain (a) ionic conducting macromols. and (b) arom. macromols. having .gtoreq.2 reactive groups which are **crosslinked** by themselves or by another compds. Preferably, the arom. macromols. are arom. polyamides having phenolic OH. The polymer electrolytes show high mech. strength, ionic cond., and electrolytes-retaining performance.
- ST **crosslinked** arom polyamide **battery** electrolytes; phenolic hydroxy polyamide **crosslinked battery** electrolyte; ionic conductor polymer **battery** electrolyte
- IT Polyamides, uses  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(**crosslinked**; in polymer electrolytes for secondary **nonaq. batteries**)
- IT Polymer electrolytes  
(for **batteries**; polymer electrolytes for secondary **nonaq. batteries**)
- IT Fluoropolymers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(ionic conductive; in polymer electrolytes for secondary **nonaq. batteries**)
- IT Polyoxyalkylenes, uses  
Polyurethanes, uses  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyamide-, **crosslinked**; in polymer electrolytes for secondary **nonaq. batteries**)
- IT Polysulfones, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polyether-; in polymer electrolytes for secondary **nonaq. batteries**)
- IT **Battery** electrolytes  
(polymer; polymer electrolytes for secondary **nonaq. batteries**)
- IT Polyamides, uses  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyoxyalkylene-, **crosslinked**; in polymer electrolytes for secondary **nonaq. batteries**)
- IT Polyethers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polysulfone-; in polymer electrolytes for secondary **nonaq. batteries**)
- IT Polyamides, uses  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(polyurethane-, **crosslinked**; in polymer electrolytes for secondary **nonaq. batteries**)
- IT 180579-38-8P, Bis(4-amino-3,5-diethylphenyl)methane-5-hydroxyisophthalic acid **copolymer** 180579-39-9P 444046-22-4P 444046-23-5P  
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)  
(**crosslinked**; in polymer electrolytes for secondary **nonaq. batteries**)
- IT 25667-42-9, 5003P  
RL: TEM (Technical or engineered material use); USES (Uses)  
(in polymer electrolytes for secondary **nonaq. batteries**)
- IT 9011-17-0, Kynar 2801  
RL: TEM (Technical or engineered material use); USES (Uses)

(ionic conductive; in polymer electrolytes for secondary  
**nonaq. batteries**)  
 IT 9011-17-0, Kynar 2801  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (ionic conductive; in polymer electrolytes for secondary  
**nonaq. batteries**)  
 RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)  
 CM 1  
 CRN 116-15-4  
 CMF C3 F6



CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 3 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2002:552264 HCAPLUS  
 DN 137:127520  
 TI **Crosslinked** ionomer-gelled **nonaqueous** polymer  
 electrolytes with high ionic conductivity for rechargeable lithium polymer  
**batteries**  
 IN Park, Chi-Kyun; Zhang, Zhiwei; Sun, Lu Ying; Chai, Chul  
 PA SKC Co., Ltd., S. Korea  
 SO Eur. Pat. Appl., 13 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 IC ICM H01M006-18  
 ICS H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1225649	A2	20020724	EP 2001-310592	20011219
	EP 1225649	A3	20020807		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
PRAI	US 2001-760720	A	20010117		
	US 2001-986459	A	20011108		
AB	Ionomer-type gelled polymer electrolytes for rechargeable				

polymer-electrode **batteries** are formed by dissolving a gelling agent into org.-liq. electrolytes, pouring the gelling agent (with the org. liq. electrolyte) into the **battery** case, and gelling the mixt. in-situ within the **battery** case at elevated temp. The gel polymer electrolytes exhibit excellent ionic cond. of up to 10<sup>-2</sup> S/cm and have a stable voltage suitable for lithium rechargeable **batteries** contg. lithium salt-based org.-liq. electrolytes. The gelled polymer electrolyte is the reaction product of (1) an amine-group-contg. compd. (e.g., polymers **copolymers**, or amines), and (2) a halide-group or epoxy-group-contg. compd. (e.g., an alkylene halide, a halomethyl group, or an epoxy monomer). Preferred compds. for component (1) include pyridines and vinylpyridines, such as 2-vinylpyridine **copolymers**; preferred compds. for component (2) include bis(bromomethyl)benzenes, .alpha.,.alpha.'-dibromoxylenes, diiodialkanes, (3,4-epoxycyclohexyl)methyl-3',4'-epoxycyclohexanecarboxylate, butadiene diepoxide, and butandiol diglycidyl ether.

- ST gelled polymer electrolyte rechargeable lithium **battery**;  
pyridinium ionomer epoxy resin gelation electrolyte rechargeable **battery**; vinylpyridine ionomer epoxy resin gelation **battery** electrolyte; iodopropane vinylpyridine ionomer gelation **battery** electrolyte
- IT Epoxy resins, uses  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(ionomers, **battery** electrolytes contg.; **crosslinked** ionomer-gelled **nonaq.** polymer electrolytes with high ionic cond. for rechargeable lithium polymer **batteries**)
- IT Gelation agents  
(ionomers; **crosslinked** ionomer-gelled **nonaq.** polymer electrolytes with high ionic cond. for rechargeable lithium polymer **batteries**)
- IT **Battery** electrolytes  
(**nonaq.**; **crosslinked** ionomer-gelled **nonaq.** polymer electrolytes with high ionic cond. for rechargeable lithium polymer **batteries**)
- IT Carbon black, uses  
Fluoropolymers, uses  
RL: DEV (Device component use); USES (Uses)  
(polymer electrode contg.; **crosslinked** ionomer-gelled **nonaq.** polymer electrolytes with high ionic cond. for rechargeable lithium polymer **batteries**)
- IT Ionomers  
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(pyridinium-epoxy and pyridinium-iodoxylylene **copolymers**, **battery** electrolytes contg.; **crosslinked** ionomer-gelled **nonaq.** polymer electrolytes with high ionic cond. for rechargeable lithium polymer **batteries**)
- IT 443890-84-4P 443890-85-5P 443890-86-6P 443890-87-7P  
RL: DEV (Device component use); NUU (Other use, unclassified); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)  
(gelling agent; **crosslinked** ionomer-gelled **nonaq.** polymer electrolytes with high ionic cond. for rechargeable lithium polymer **batteries**)
- IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 616-38-6, Dimethyl carbonate 7791-03-9, Lithium perchlorate 14283-07-9, Lithium tetrafluoroborate 18424-17-4, Lithium hexafluoroantimonate 21324-40-3, Lithium hexafluorophosphate 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium trifluoromethanesulfonate 90076-65-6, Lithium bis(trifluoromethanesulfonyl)imide

RL: DEV (Device component use); USES (Uses)  
 (nonaq. electrolyte contg.; **crosslinked**  
 ionomer-gelled **nonaq.** polymer electrolytes with high ionic  
 cond. for rechargeable lithium polymer **batteries**)

IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) **24937-79-9**,  
 Polyvinylidene difluoride  
 RL: DEV (Device component use); USES (Uses)  
 (polymer electrode contg.; **crosslinked** ionomer-gelled  
**nonaq.** polymer **electrolytes** with high ionic cond. for  
 rechargeable lithium polymer **batteries**)

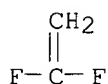
IT **24937-79-9**, Polyvinylidene difluoride  
 RL: DEV (Device component use); USES (Uses)  
 (polymer electrode contg.; **crosslinked** ionomer-gelled  
**nonaq.** polymer **electrolytes** with high ionic cond. for  
 rechargeable lithium polymer **batteries**)

RN **24937-79-9** HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 4 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2002:368040 HCAPLUS  
 DN 136:372245  
 TI **Nonaqueous** electrolyte secondary **battery**, separator  
 used in it, and its manufacture  
 IN Ueda, Hideyuki; Kuranaka, Satoshi; Nanai, Norishige  
 PA Matsushita Electric Industrial Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 9 pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese  
 IC ICM H01M002-16  
 ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002141042	A2	20020517	JP 2000-335502	20001102
AB	<p>The <b>battery</b> has a 9-17-.mu.m separator comprising a successive laminate of (A) a 2-3-.mu.m heat-resistant porous polymer cathode-side layer, which may be an aramid resin, (B) a 5-9-.mu.m porous polyolefin intermediate layer, which may be polyethylene, and (C) a gel polymer anode-side layer, which may be a 2-3-.mu.m vinylidene fluoride polymer layer or a 3-5-.mu.m polyoxyethylene deriv. layer. The separator is manufd. by forming a porous polyethylene film, applying an aramid resin on a side of the film, making the aramid resin layer porous, and applying a vinylidene fluoride polymer or a precursor soln. contg. ethylene oxide polymers, polymn. initiators, and electrolytic solns. on the other side of the film, followed by 3-dimensional thermal or UV <b>crosslinking</b>. The separator shows reduced thickness and improved mech. strength.</p>				



- ST **nonaq** electrolyte **battery** separator porous laminate;  
aramid resin polyethylene polyoxyethylene laminate **battery**  
separator; vinylidene fluoride polymer porous polyethylene aramid resin  
**battery** separator
- IT Polyamides, uses  
RL: DEV (Device component use); TEM (Technical or engineered material  
use); USES (Uses)  
(arom.; laminated **battery** separator using porous aramid  
resin, porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq.** electrolyte secondary  
**battery**)
- IT Fluoropolymers, uses  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PYP (Physical process); TEM (Technical or engineered material  
use); PROC (Process); USES (Uses)  
(gel; laminated **battery** separator using porous aramid resin,  
porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq.** electrolyte secondary  
**battery**)
- IT Fluoro rubber  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(hexafluoropropene-vinylidene fluoride, Kynar Flex 2801; laminated  
**battery** separator using porous aramid resin, porous  
polyethylene, and vinylidene fluoride polymer gel or polyoxyethylene  
gel for **nonaq.** electrolyte secondary **battery**)
- IT Secondary **batteries**  
Secondary **battery** separators  
(laminated **battery** separator using porous aramid resin,  
porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq.** electrolyte secondary  
**battery**)
- IT Polyesters, uses  
Polyoxyalkylenes, uses  
RL: DEV (Device component use); TEM (Technical or engineered material  
use); USES (Uses)  
(laminated **battery** separator using porous aramid resin,  
porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq.** electrolyte secondary  
**battery**)
- IT 24938-64-5P, p-Phenylenediamine-terephthaloyl chloride **copolymer**  
,sru 26125-61-1P, p-Phenylenediamine-terephthaloyl chloride  
**copolymer**  
RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(laminated **battery** separator using porous aramid resin,  
porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq.** electrolyte secondary  
**battery**)
- IT 9002-88-4, Polyethylene  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PYP (Physical process); TEM (Technical or engineered material  
use); PROC (Process); USES (Uses)  
(laminated **battery** separator using porous aramid resin,  
porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq.** electrolyte secondary  
**battery**)
- IT 9003-11-6, Ethylene oxide-propylene oxide **copolymer**  
9010-75-7 9010-89-3, Adipic acid-diethylene glycol  
**copolymer** 25036-49-1, Adipic acid-diethylene glycol

**copolymer**, sru 25322-68-3, Polyethylene oxide 35064-83-6  
, Perfluoromethyl vinyl ether-vinylidene fluoride **copolymer**  
RL: DEV (Device component use); TEM (Technical or engineered material  
use); USES (Uses)

(laminated **battery** separator using porous aramid resin,  
porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq. electrolyte**  
secondary **battery**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**

RL: DEV (Device component use); TEM (Technical or engineered material  
use); USES (Uses)

(rubber; laminated **battery** separator using porous aramid  
resin, porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq. electrolyte**  
secondary **battery**)

IT 9010-75-7 35064-83-6, Perfluoromethyl vinyl  
ether-vinylidene fluoride **copolymer**

RL: DEV (Device component use); TEM (Technical or engineered material  
use); USES (Uses)

(laminated **battery** separator using porous aramid resin,  
porous polyethylene, and vinylidene fluoride polymer gel or  
polyoxyethylene gel for **nonaq. electrolyte**  
secondary **battery**)

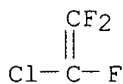
RN 9010-75-7 HCAPLUS

CN Ethene, chlorotrifluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX  
NAME)

CM 1

CRN 79-38-9

CMF C2 C1 F3

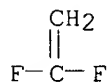


*Trifluorochloroethylene*

CM 2

CRN 75-38-7

CMF C2 H2 F2



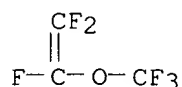
RN 35064-83-6 HCAPLUS

CN Ethene, trifluoro(trifluoromethoxy)-, polymer with 1,1-difluoroethene  
(9CI) (CA INDEX NAME)

CM 1

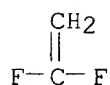
CRN 1187-93-5

CMF C3 F6 O



CM 2

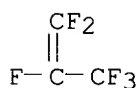
CRN 75-38-7  
CMF C2 H2 F2



IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)  
(rubber; laminated **battery** separator using porous aramid resin, porous polyethylene, and vinylidene fluoride polymer gel or polyoxyethylene gel for **nonaq. electrolyte** secondary **battery**)  
RN 9011-17-0 HCAPLUS  
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

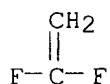
CM 1

CRN 116-15-4  
CMF C3 F6



CM 2

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 5 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2002:87398 HCAPLUS  
DN 136:137415  
TI Secondary **polymer electrolyte** lithium **battery**  
IN Eda, Nobuo; Matsui, Toru  
PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

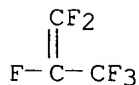
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002033128	A2	20020131	JP 2000-215522	20000717
AB	The <b>battery</b> has a gelled <b>polymer electrolyte</b> between a cathode and an anode in a <b>battery</b> case, where the electrolyte layer has a microporous polyolefin film facing the cathode, and a dispersed SiO <sub>2</sub> contg. poly(vinylidene fluoride) film, which becomes a gel by absorbing a <b>nonaq. electrolyte soln</b> .. facing the anode.				
ST	secondary lithium <b>battery</b> gel <b>polymer electrolyte</b> laminate; polyvinylidene fluoride silica gel <b>polymer electrolyte</b> lithium <b>battery</b> ; polyolefin polyvinylidene fluoride laminate lithium <b>battery</b> electrolyte				
IT	<b>Battery electrolytes</b> (structure of gel <b>polymer electrolyte</b> laminates for secondary lithium <b>batteries</b> )				
IT	9002-88-4, Polyethylene RL: DEV (Device component use); USES (Uses) (gel <b>polymer electrolyte</b> laminates contg. polyolefin film on cathode side for secondary lithium <b>batteries</b> )				
IT	7631-86-9, Silica, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> RL: DEV (Device component use); USES (Uses) (gel <b>polymer electrolyte</b> laminates contg. silica dispersed vinylene fluoride based polymer sheet for secondary lithium <b>batteries</b> )				
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (structure of gel <b>polymer electrolyte</b> laminates for secondary lithium <b>batteries</b> )				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> RL: DEV (Device component use); USES (Uses) (gel <b>polymer electrolyte</b> laminates contg. silica dispersed vinylene fluoride based polymer sheet for secondary lithium <b>batteries</b> )				
RN	9011-17-0 HCAPLUS				
CN	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)				

CM 1

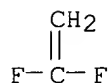
CRN 116-15-4

CMF C3 F6



CM 2

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 6 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:918966 HCAPLUS

DN 136:40202

TI **Nonaqueous battery** using gel **electrolyte**  
obtained by gelling **nonaqueous electrolyte**  
**solution**

IN Suzuki, Yusuke; Shibuya, Mashio

PA Sony Corporation, Japan

SO Eur. Pat. Appl., 28 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM H01M010-40

ICS H01M006-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1164653	A2	20011219	EP 2001-114359	20010613
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2002008723	A2	20020111	JP 2000-182276	20000616
	US 2002119377	A1	20020829	US 2001-879753	20010612
	CN 1335327	A	20020213	CN 2001-124889	20010615
PRAI	JP 2000-182276	A	20000616		

AB In a gel **electrolyte**, **nonaq. electrolyte**  
**soln.** obtained by dissolving **electrolyte** salt contg. Li  
in a **nonaq.** solvent is gelled by a matrix polymer including a  
**copolymer** as a main component which contains vinylidene fluoride  
as a **monomer** unit. The **copolymer** employed as the  
matrix polymer is carboxylic acid modified polyvinylidene fluoride into  
which a structure formed by esterifying a part or all of a carboxyl group,  
a carboxylic acid or an acetic anhydride structure is introduced. The  
carboxylic acid modified polyvinylidene fluoride can dissolve and retain  
therein a solvent of low **viscosity** having a low b.p. Therefore,  
the carboxylic acid modified polyvinylidene fluoride is used as a matrix  
polymer to improve the ionic cond. of the gel electrolyte at low temp.  
Thus, a low temp. characteristic is improved and a cyclic characteristic  
and a load characteristic are also improved.

ST **battery nonaq gel electrolyte**

IT Transition metal oxides

RL: DEV (Device component use); USES (Uses)  
(lithiated; **nonaq. battery** using gel  
**electrolyte** obtained by gelling **nonaq.**  
**electrolyte soln.**)

- IT Secondary batteries  
(lithium; nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln.)
- IT Polymerization  
(matrix; nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln.)
- IT Battery electrolytes  
(nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln .)
- IT Carbonaceous materials (technological products)  
RL: DEV (Device component use); USES (Uses)  
(nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln .)
- IT Fluoropolymers, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln .)
- IT Lithium alloy, base  
RL: DEV (Device component use); USES (Uses)  
(nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln .)
- IT 75-38-7D, polymers with maleate salts and maleic anhydride 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-31-6D, 2,5-Furandione, polymers with maleate salts and vinylidene fluoride, uses 110-16-7D, Maleate-maleic anhydride-vinylidene fluoride copolymer , salts, polymers with maleic anhydride and vinylidene fluoride, uses 623-53-0, Ethyl methyl carbonate 7429-90-5, Aluminum, uses 7439-93-2, Lithium, uses 7440-50-8, Copper, uses 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 380481-18-5, Cobalt lithium oxide (Co0.2Li0.7O2) 380481-19-6  
RL: DEV (Device component use); USES (Uses)  
(nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln .)
- IT 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 25684-81-5, Methyl methacrylate-vinylidene fluoride copolymer 161109-32-6 , Methyl maleate-vinylidene fluoride copolymer 380481-15-2, Ethyl maleate-vinylidene fluoride copolymer 380481-16-3, Monopropyl maleate-vinylidene fluoride copolymer 380481-17-4, Monobutyl maleate-vinylidene fluoride copolymer 380481-37-8, Monoethyl maleate-vinylidene fluoride copolymer  
RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln .)
- IT 24937-79-9, PvdF  
RL: TEM (Technical or engineered material use); USES (Uses)  
(nonaq. battery using gel electrolyte obtained by gelling nonaq. electrolyte soln .)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 25684-81-5, Methyl methacrylate-vinylidene

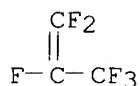
fluoride copolymer 161109-32-6, Methyl  
maleate-vinylidene fluoride copolymer 380481-15-2,  
Ethyl maleate-vinylidene fluoride copolymer 380481-16-3  
, Monopropyl maleate-vinylidene fluoride copolymer  
380481-17-4, Monobutyl maleate-vinylidene fluoride  
copolymer 380481-37-8, Monoethyl maleate-vinylidene  
fluoride copolymer

RL: MOA (Modifier or additive use); USES (Uses)  
(nonaq. battery using gel electrolyte  
obtained by gelling nonaq. electrolyte soln  
.)

RN 9011-17-0 HCAPLUS  
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

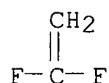
CM 1

CRN 116-15-4  
CMF C3 F6



CM 2

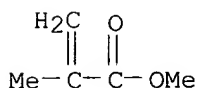
CRN 75-38-7  
CMF C2 H2 F2



RN 25684-81-5 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, methyl ester, polymer with 1,1-difluoroethene  
(9CI) (CA INDEX NAME)

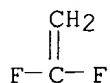
CM 1

CRN 80-62-6  
CMF C5 H8 O2



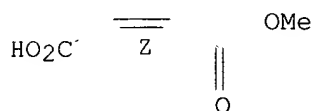
CM 2

CRN 75-38-7  
CMF C2 H2 F2

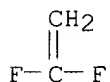


RN 161109-32-6 HCAPLUS  
 CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with  
 1,1-difluoroethene (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 3052-50-4  
 CMF C5 H6 O4  
 CDES 2:Z

Double bond geometry as shown.

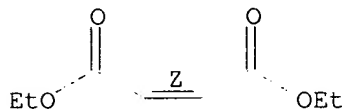


CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2



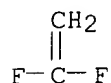
RN 380481-15-2 HCAPLUS  
 CN 2-Butenedioic acid (2Z)-, diethyl ester, polymer with 1,1-difluoroethene  
 (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 141-05-9  
 CMF C8 H12 O4  
 CDES 2:Z

Double bond geometry as shown.



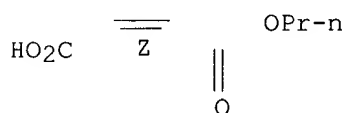
CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2



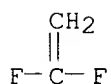


RN 380481-16-3 HCAPLUS  
 CN 2-Butenedioic acid (2Z)-, monopropyl ester, polymer with  
 1,1-difluoroethene (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 925-03-1  
 CMF C7 H10 O4  
 CDES 2:Z

Double bond geometry as shown.

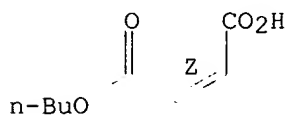


CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2

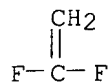


RN 380481-17-4 HCAPLUS  
 CN 2-Butenedioic acid (2Z)-, monobutyl ester, polymer with 1,1-difluoroethene  
 (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 925-21-3  
 CMF C8 H12 O4  
 CDES 2:Z

Double bond geometry as shown.



CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2

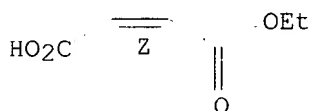


RN 380481-37-8 HCAPLUS  
CN 2-Butenedioic acid (2Z)-, monoethyl ester, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

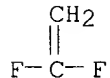
CRN 3990-03-2  
CMF C6 H8 O4  
CDES 2:Z

Double bond geometry as shown.



CM 2

CRN 75-38-7  
CMF C2 H2 F2

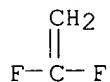


IT 24937-79-9, PvdF  
RL: TEM (Technical or engineered material use); USES (Uses)  
(**nonaq. battery** using gel **electrolyte**  
obtained by gelling **nonaq. electrolyte soln**  
)

RN 24937-79-9 HCAPLUS  
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 7 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2001:865066 HCAPLUS  
DN 136:8988  
TI Gel **electrolytic** precursor and manufacturing of **non-  
aqueous secondary battery**

IN Hibino, Seiji; Kano, Koji; Iwahisa, Masahiro  
 PA Toshiba Battery Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS C08K003-16; C08K003-24; C08K003-32; C08K003-38; C08K005-42;  
 C08L023-08; C08L025-12; C08L027-16; C08L027-20; C08L033-20;  
 C08L055-02; C08L071-02  
 CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 72

FAN.CNT 1

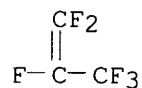
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001332303	A2	20011130	JP 2000-150171	20000522
AB	The title <b>battery</b> consists of a pos. electrode, a neg. electrode, and a gel electrolytic layer disposed between the pos. and neg. electrodes. The porous gel <b>electrolytic</b> precursor contains a 1st <b>polymer</b> which is barely disol. in a <b>non-aq. electrolytic soln.</b> and a 2nd <b>polymer</b> of gel-formable in a <b>non-aq. electrolytic soln.</b> The vol. ratio of the 2nd polymer to the 1st polymer is in the range of 0.1-5. The expansion rate of the 1st polymer is .ltoreq.30%.				
ST	gel <b>electrolytic</b> precursor <b>nonaq</b> secondary <b>battery</b>				
IT	Secondary <b>batteries</b> (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
IT	Carbon black, uses Carbon fibers, uses Fluoropolymers, uses Phenolic resins, uses <b>Polymers</b> , uses Polyoxyalkylenes, uses RL: DEV (Device component use); USES (Uses) (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
IT	68-12-2, Dmf, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium oxide, uses 1317-33-5, Molybdenum disulfide, uses 1344-28-1, Alumina, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9004-34-6, Cellulose, uses <b>9011-17-0</b> 12031-65-1, Lithium nickel oxide (LiNiO2) 12039-13-3, Titanium disulfide 12057-17-9, Lithium manganese oxide (LiMn2O4) 12190-79-3, Lithium cobalt oxide (LiCoO2) 14283-07-9 21324-40-3 24937-78-8, Ethylene vinyl acetate <b>copolymer 24937-79-9</b> , Polyvinylidene fluoride 24980-62-9, Acrylonitrile vinyl acetate <b>copolymer 25014-41-9</b> , Polyacrylonitrile 25053-12-7, Acrylonitrile ethylacrylate <b>copolymer 25322-68-3</b> , Polyethylene oxide 25322-69-4, Polypropylene oxide 29935-35-1 33454-82-9 RL: DEV (Device component use); USES (Uses) (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
IT	78-93-3, Methyl ethyl ketone, uses 108-88-3, Toluene, uses 109-99-9, Tetrahydrofuran, uses RL: TEM (Technical or engineered material use); USES (Uses) (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
IT	<b>9011-17-0 24937-79-9</b> , Polyvinylidene fluoride				

RL: DEV (Device component use); USES (Uses)  
(gel **electrolytic** precursor and manufg. of **non-  
aq. secondary battery**)

RN 9011-17-0 HCAPLUS  
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

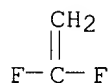
CM 1

CRN 116-15-4  
CMF C3 F6



CM 2

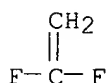
CRN 75-38-7  
CMF C2 H2 F2



RN 24937-79-9 HCAPLUS  
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 8 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2001:865065 HCAPLUS  
DN 136:8987  
TI Gel **electrolytic** precursor and manufacturing of **non-  
aqueous secondary battery**  
IN Hibino, Seiji; Iwahisa, Masahiro; Kano, Koji  
PA Toshiba Battery Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M010-40  
ICS C08J009-28; C08L101-00  
CC 52-1 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 72

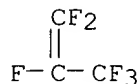
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001332302	A2	20011130	JP 2000-150170	20000522
AB	The title <b>battery</b> consists of a pos. electrode, a neg. electrode, and a gel electrolytic layer disposed between the pos. and neg. electrodes. The porous gel <b>electrolytic</b> precursor contains a 1st <b>polymer</b> which is barely disol. in a <b>non-aq. electrolytic soln.</b> and a 2nd <b>polymer</b> of gel-formable in a <b>non-aq. electrolytic soln.</b> The precursor is soaked with a <b>non-aq. electrolytic soln.</b> , followed by heating and cooling to form the gel electrolyte. The vol. ratio of the 2nd polymer to the 1st polymer is in the range of 0.1-5.				
ST	gel <b>electrolytic</b> precursor <b>nonaq</b> secondary <b>battery</b>				
IT	Secondary <b>batteries</b> (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
IT	Carbon black, uses Carbon fibers, uses Fluoropolymers, uses Phenolic resins, uses <b>Polymers</b> , uses Polyoxyalkylenes, uses RL: DEV (Device component use); USES (Uses) (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
IT	68-12-2, Dmf, uses 872-50-4, N-Methyl-2-pyrrolidone, uses 1313-13-9, Manganese dioxide, uses 1314-62-1, Vanadium oxide, uses 1317-33-5, Molybdenum disulfide, uses 1344-28-1, Alumina, uses 7440-02-0, Nickel, uses 7440-50-8, Copper, uses 7782-42-5, Graphite, uses 7791-03-9, Lithium perchlorate 9004-34-6, Cellulose, uses <b>9011-17-0</b> 12031-65-1, Lithium nickel oxide (LiNiO <sub>2</sub> ) 12039-13-3, Titanium disulfide 12057-17-9, Lithium manganese oxide (LiMnO <sub>4</sub> ) 12190-79-3, Lithium cobalt oxide (LiCoO <sub>2</sub> ) 14283-07-9 21324-40-3 24937-78-8, Ethylene vinyl acetate <b>copolymer 24937-79-9</b> , Polyvinylidene fluoride 24980-62-9, Acrylonitrile vinyl acetate <b>copolymer 25014-41-9</b> , Polyacrylonitrile 25053-12-7, Acrylonitrile ethylacrylate <b>copolymer 25322-68-3</b> , Polyethylene oxide 25322-69-4, Polypropylene oxide 29935-35-1 33454-82-9 RL: DEV (Device component use); USES (Uses) (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
IT	78-93-3, Methyl ethyl ketone, uses 108-88-3, Toluene, uses 109-99-9, Tetrahydrofuran, uses RL: TEM (Technical or engineered material use); USES (Uses) (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
IT	<b>9011-17-0 24937-79-9</b> , Polyvinylidene fluoride RL: DEV (Device component use); USES (Uses) (gel <b>electrolytic</b> precursor and manufg. of <b>non-aq. secondary battery</b> )				
RN	9011-17-0 HCAPLUS				
CN	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)				

CM 1

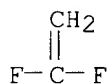
CRN 116-15-4

CMF C3 F6



CM 2

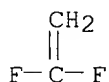
CRN 75-38-7  
CMF C2 H2 F2



RN 24937-79-9 HCAPLUS  
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 9 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2001:847743 HCAPLUS  
DN 136:9011  
TI Manufacture of **electrolyte** layer and **nonaqueous electrolyte battery**  
IN Kikuchi, Takeharu; Maniwa, Osamu; Akahira, Yukio; Matsuo, Naoki  
PA Sony Corp., Japan  
SO Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M010-40  
ICS H01M010-40; H01M006-18; H01M006-22  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001325993	A2	20011122	JP 2000-145551	20000517
AB	The electrolyte layer is prepd. on an electrode by dissolving an <b>electrolyte</b> salt, a matrix <b>polymer</b> , in a solvent swellable for the polymer, and a solvent under heating to form an electrolyte soln.; spraying the soln. on an electrode in a heated air, and removing the solvent from the sprayed layer. The <b>batteries</b> are prepd. by using the above method to form electrode layer on cathode and/or anode.				

ST **nonaq battery electrolyte** layer manuf  
soln spraying; **battery electrode polymer**  
**electrolyte** layer soln spraying

IT Secondary **batteries**  
(lithium; manuf. of **polymer electrolyte** layers on  
electrodes by spraying solns. for secondary lithium **batteries**  
)

IT **Battery electrolytes**  
(manuf. of **polymer electrolyte** layers on electrodes  
by spraying solns. for secondary lithium **batteries**)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7,  
Propylene carbonate 616-38-6, Dimethyl carbonate 7782-42-5, Graphite,  
uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer** 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
21324-40-3, Lithium hexafluorophosphate  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PROC (Process); USES (Uses)  
(manuf. of **polymer electrolyte** layers on electrodes  
by spraying solns. for secondary lithium **batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PROC (Process); USES (Uses)  
(manuf. of **polymer electrolyte** layers on electrodes  
by spraying solns. for secondary lithium **batteries**)

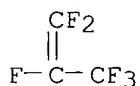
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

CRN 116-15-4

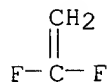
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 10 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2001:796408 HCAPLUS  
DN 135:346868  
TI Gel electrolyte **battery**  
IN Shibuya, Mashio; Suzuki, Yusuke  
PA Sony Corporation, Japan  
SO Eur. Pat. Appl., 19 pp.

CODEN: EPXXDW

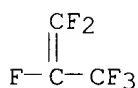
DT Patent  
 LA English  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38

FAN.CNT 1

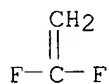
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1150374	A1	20011031	EP 2001-110350	20010426
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001313075	A2	20011109	JP 2000-132925	20000427
	US 2001053485	A1	20011220	US 2001-844004	20010427
	CN 1333579	A	20020130	CN 2001-122097	20010427
PRAI	JP 2000-132925	A	20000427		
AB	In a gel <b>electrolyte</b> , the <b>nonaq. electrolytic soln.</b> having a lithium-contg. <b>electrolyte</b> salt dissolved in a <b>nonaq.</b> solvent is gelled by a matrix polymer. The gel electrolyte includes a halogen substituted ethylene carbonate obtained by replacing one or more hydrogen atoms of ethylene carbonate by halogens. Since the halogen substituted ethylene carbonate (for instance, fluorinated ethylene carbonate) is extremely low in its reactivity with a neg. electrode, a loss capacity is small so that it is very effective for obtaining a high capacity. Further, the halogen substituted ethylene carbonate has a m.p. lower than that of ethylene carbonate, it can realize a large capacity with less deterioration of a low temp. performance than that of ethylene carbonate. Accordingly, a strength, a liq. retaining characteristic, a stability relative to the neg. electrode, a <b>battery</b> capacity, a cyclic characteristic, a load characteristic and a low temp. characteristic can be improved.				
ST	<b>Battery</b> gel electrolyte; fluorinated ethylene carbonate gel electrolyte <b>battery</b>				
IT	<b>Battery</b> electrolytes Secondary <b>batteries</b> (gel electrolyte <b>battery</b> )				
IT	Carbonaceous materials (technological products) Fluoropolymers, uses Polyoxyalkylenes, uses RL: DEV (Device component use); USES (Uses) (gel electrolyte <b>battery</b> )				
IT	Transition metal oxides RL: DEV (Device component use); USES (Uses) (lithiated; gel electrolyte <b>battery</b> )				
IT	Lithium alloy, base RL: DEV (Device component use); USES (Uses) (gel electrolyte <b>battery</b> )				
IT	96-49-1, Ethylene carbonate 96-49-1D, Ethylene carbonate, fluorinated 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 623-96-1, Dipropyl carbonate 7439-93-2, Lithium, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 12190-79-3, Cobalt lithium oxide colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 24937-79-9, PvdF 25014-41-9, Polyacrylonitrile 25067-61-2, Polymethacrylonitrile 25322-68-3, Peo 25322-69-4, Polypropylene oxide 30714-78-4, Ethyl butyl carbonate 35363-40-7, Ethyl propyl carbonate 56525-42-9, Methyl propyl carbonate 90076-65-6 132404-42-3 132843-44-8 183301-46-4 210406-60-3 RL: DEV (Device component use); USES (Uses)				



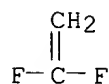
(gel electrolyte battery)  
 IT 7782-42-5, Graphite, uses  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (gel electrolyte battery)  
 IT 7429-90-5, Aluminum, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (gel electrolyte battery)  
 RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD  
 RE  
 (1) Anon; PATENT ABSTRACTS OF JAPAN 1996, V1996(01)  
 (2) McMillan, R; US 5529859 A 1996 HCAPLUS  
 (3) Mitsui Petrochemical Ind; EP 0823744 A 1998 HCAPLUS  
 (4) Sharp Kk; EP 0924788 A 1999 HCAPLUS  
 (5) Sony Corp; JP 07240232 A 1995 HCAPLUS  
 (6) Sony Corp; EP 0994521 A 2000 HCAPLUS  
 IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
 copolymer 24937-79-9, PvdF  
 RL: DEV (Device component use); USES (Uses)  
 (gel electrolyte battery)  
 RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)  
 CM 1  
 CRN 116-15-4  
 CMF C3 F6



CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2



RN 24937-79-9 HCAPLUS  
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 75-38-7  
 CMF C2 H2 F2



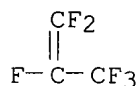
L93 ANSWER 11 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2001:747314 HCAPLUS  
 DN 135:291406  
 TI Secondary **polymer electrolyte batteries** and  
 their manufacture  
 IN Kuroda, Akira; Ishii, Hironori; Minetani, Kunihiro  
 PA Matsushita Electric Industrial Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001283912	A2	20011012	JP 2000-93165	20000330
AB	The <b>batteries</b> have Li intercalating cathodes, Li intercalating carbonaceous anodes, and a <b>polymer gel electrolyte</b> retaining a <b>nonaq. electrolyte soln.</b> ; where the cathode and/or anode active mass mixt. contain an <b>electrolyte</b> retaining <b>polymer</b> having pores of .gtoreq.2 different size ranges. The <b>batteries</b> are prepd. by: applying a cathode active mass paste contg. a polymer and a plasticizer on a cathode collector, drying, and rolling to form a cathode; applying an anode active mass paste contg. a polymer and a plasticizer on an anode collector, drying, and rolling to form an anode; holding a separator between the electrodes; inserting the assembly in a <b>battery</b> case; where the plasticizer for the cathode and/or anode is a mixt., contg. a 1st plasticizer sol. in solvent but not in polymer and polymer swelling 2nd plasticizer.				
ST	secondary lithium <b>battery</b> manuf <b>electrolyte</b> retaining <b>polymer</b> ; lithium <b>battery electrolyte</b> retaining <b>polymer</b> pore size				
IT	<b>Battery</b> electrodes (electrodes contg. <b>electrolyte</b> retaining <b>polymers</b> having pores of different size ranges for secondary lithium <b>batteries</b> )				
IT	7440-44-0, Carbon, uses 52627-24-4, Cobalt lithium oxide RL: DEV (Device component use); USES (Uses) (electrodes contg. <b>electrolyte</b> retaining <b>polymers</b> having pores of different size ranges for secondary lithium <b>batteries</b> )				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> RL: DEV (Device component use); PRP (Properties); USES (Uses) (electrodes contg. <b>electrolyte</b> retaining <b>polymers</b> having pores of different size ranges for secondary lithium <b>batteries</b> )				
IT	84-74-2, Dbp 623-53-0, Ethyl methyl carbonate RL: NUU (Other use, unclassified); USES (Uses) (plasticizers in manuf. of <b>electrolyte</b> retaining <b>polymers</b> having pores of different size ranges for secondary lithium <b>battery</b> electrodes)				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> RL: DEV (Device component use); PRP (Properties); USES (Uses) (electrodes contg. <b>electrolyte</b> retaining <b>polymers</b> having pores of different size ranges for secondary lithium <b>batteries</b> )				

RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

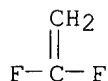
CM 1

CRN 116-15-4  
 CMF C3 F6



CM 2

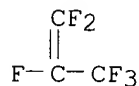
CRN 75-38-7  
 CMF C2 H2 F2



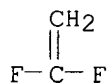
L93 ANSWER 12 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2001:676477 HCAPLUS  
 DN 135:213516  
 TI Manufacture of secondary organic solid electrolyte **batteries** and  
 the **batteries**  
 IN Ishisaki, Haruaki  
 PA Sony Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001250583	A2	20010914	JP 2000-62813	20000308
AB	The <b>batteries</b> are prepd. by applying a melted gel <b>soln</b> ., contg. a <b>nonaq. electrolyte soln.</b> and a plasticizer, on cathodes and anodes having active mass layers on collectors and solidifying the gel <b>soln.</b> ; where the electrodes are kept under a reduced pressure atm. right before applying the gel <b>soln.</b> and moved to an atm. or elevated pressure atm. after the application. The <b>batteries</b> have a gel electrolyte layer formed by the above method between electrodes, with or without a porous separator.				
ST	secondary gel electrolyte <b>battery</b> structure manuf				
IT	Secondary <b>batteries</b> (lithium; manuf. of secondary lithium <b>batteries</b> with electrodes contg. org. solid electrolytes coatings from melted gels)				
IT	96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 7782-42-5, Graphite, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride				

**copolymer** 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (manuf. of secondary lithium **batteries** with electrodes contg.  
 org. solid **electrolytes** coatings from melted gels)  
 IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (manuf. of secondary lithium **batteries** with electrodes contg.  
 org. solid **electrolytes** coatings from melted gels)  
 RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)  
 CM 1  
 CRN 116-15-4  
 CMF C3 F6



CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 13 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2001:564112 HCAPLUS  
 DN 135:139845  
 TI Gelled electrolyte containing vinylidene fluoride-based **copolymer**  
 and thin primary lithium **battery** using it  
 IN Ino, Tadashi; Ichikawa, Kenji; Nishino, Takatomo; Shimizu, Tetsuo  
 PA Daikin Industries, Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M006-22  
 ICS H01M006-16; H01M006-18  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1  

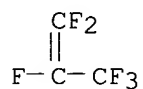
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001210333	A2	20010803	JP 2000-14788	20000124
AB	The gelled electrolyte contains F-contg. vinylidene-type <b>copolymer</b> swelled and impregnated with a <b>nonaq. electrolyte</b>				

soln., where the **copolymer** contains vinylidene fluoride repeating unit 35-99, tetrafluoroethylene repeating unit 1-50, and **copolymerizable monomer** 0-20 mol% and has m.p. .gtoreq.80.degree. and crystn. degree 20-80%. A primary Li **battery** equipped with the gelled electrolyte membrane between a cathode and an anode is also claimed. The electrolyte has high ion cond. and film strength and the **battery** shows high safety.

- ST gelled electrolyte vinylidene fluoride tetrafluoroethylene **copolymer** lithium **battery** safety
- IT **Battery** electrolytes  
Safety  
(gelled electrolyte contg. vinylidene fluoride-tetrafluoroethylene-based **copolymer** for thin lithium **battery**)
- IT Fluoropolymers, uses  
RL: DEV (Device component use); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)  
(gelled electrolyte contg. vinylidene fluoride-tetrafluoroethylene-based **copolymer** for thin lithium **battery**)
- IT Primary **batteries**  
(lithium; gelled electrolyte contg. vinylidene fluoride-tetrafluoroethylene-based **copolymer** for thin lithium **battery**)
- IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte solvent; gelled electrolyte contg. vinylidene fluoride-tetrafluoroethylene-based **copolymer** for thin lithium **battery**)
- IT 7791-03-9, Lithium perchlorate  
RL: DEV (Device component use); USES (Uses)  
(electrolyte; gelled electrolyte contg. vinylidene fluoride-tetrafluoroethylene-based **copolymer** for thin lithium **battery**)
- IT 25190-89-0P, Hexafluoropropene-tetrafluoroethylene-vinylidene fluoride **copolymer** 25684-76-8P, Tetrafluoroethylene-vinylidene fluoride **copolymer**  
RL: DEV (Device component use); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)  
(gelled **electrolyte** contg. vinylidene fluoride-tetrafluoroethylene-based **copolymer** for thin lithium **battery**)
- IT 25190-89-0P, Hexafluoropropene-tetrafluoroethylene-vinylidene fluoride **copolymer** 25684-76-8P, Tetrafluoroethylene-vinylidene fluoride **copolymer**  
RL: DEV (Device component use); PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation); USES (Uses)  
(gelled **electrolyte** contg. vinylidene fluoride-tetrafluoroethylene-based **copolymer** for thin lithium **battery**)
- RN 25190-89-0 HCAPLUS
- CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene and tetrafluoroethene (9CI) (CA INDEX NAME)

CM 1

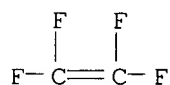
CRN 116-15-4  
CMF C3 F6



CM 2

CRN 116-14-3

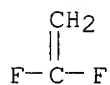
CMF C2 F4



CM 3

CRN 75-38-7

CMF C2 H2 F2



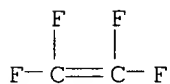
RN 25684-76-8 HCAPLUS

CN Ethene, tetrafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

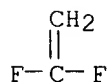
CMF C2 F4



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 14 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2001:360317 HCAPLUS

KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

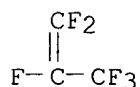
DN 134:342559  
 TI Lithium **battery** comprising a gel-electrolyte  
 IN Hikmet, Rifat A. M.; Feil, Hans  
 PA Koninklijke Philips Electronics N.V., Neth.  
 SO PCT Int. Appl., 9 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM H01M  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001035471	A2	20010517	WO 2000-EP10724	20001026
	WO 2001035471	A3	20011227		
	W: CN, JP				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1183750	A2	20020306	EP 2000-993058	20001026
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	US 6444368	B1	20020903	US 2000-710913	20001113
PRAI	EP 1999-203772	A	19991111		
	EP 2000-200814	A	20000307		
	WO 2000-EP10724	W	20001026		
AB	Disclosed is a lithium <b>battery</b> , comprising a neg. electrode, a pos. electrode, a separator, and a <b>nonaq. electrolyte soln.</b> between the neg. and the pos. electrode. At least the neg. electrode material and the pos. electrode material are provided with a pattern of holes which accommodate a polymeric material which sticks and presses the neg. electrode, the pos. electrode and the separator together. In order to decrease the tendency of the electrolyte soln. to sublime, thereby expanding the packaging material around the <b>battery</b> , the <b>nonaq. electrolyte soln.</b> comprises a <b>soln.</b> of lithium salts, solvent mols. and a <b>polymer</b> , forming a gel-electrolyte.				
ST	lithium <b>battery polymer gel electrolyte</b>				
IT	<b>Battery</b> electrolytes Gelation agents (lithium <b>battery</b> comprising gel-electrolyte)				
IT	Fluoropolymers, uses RL: DEV (Device component use); USES (Uses) (lithium <b>battery</b> comprising gel-electrolyte)				
IT	Primary <b>batteries</b> (lithium; lithium <b>battery</b> comprising gel-electrolyte)				
IT	7782-42-5, Graphite, uses 9002-88-4, Polyethylene 9003-53-6, Polystyrene 9003-54-7, Acrylonitrile-styrene <b>copolymer</b> 9011-14-7, Pmma 9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> 12190-79-3, Cobalt lithium oxide colio2 25038-87-3, Polyvinyl methyl ketone RL: DEV (Device component use); USES (Uses) (lithium <b>battery</b> comprising gel-electrolyte)				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> RL: DEV (Device component use); USES (Uses) (lithium <b>battery</b> comprising gel-electrolyte)				
RN	9011-17-0 HCAPLUS				
CN	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)				

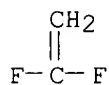
CM 1

CRN 116-15-4  
CMF C3 F6



CM 2

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 15 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2001:246688 HCAPLUS  
DN 134:254694  
TI Gel electrolyte **battery**  
IN Shibuya, Mashio; Hatazawa, Tsuyonobu; Hara, Tomitaro; Shibamoto, Goro;  
Goto, Shuji  
PA Sony Corporation, Japan  
SO Eur. Pat. Appl., 24 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
IC ICM H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1089371	A1	20010404	EP 2000-121124	20000928
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001167797	A2	20010622	JP 1999-375345	19991228
	NO 2000004856	A	20010402	NO 2000-4856	20000927
	CN 1293461	A	20010502	CN 2000-128592	20000930
PRAI	JP 1999-279790	A	19990930		
	JP 1999-375345	A	19991228		
AB	The present invention provides a gel <b>electrolyte</b> cell including a <b>nonaq. electrolytic soln.</b> contg. lithium-contg. <b>electrolyte</b> salt solved in a <b>nonaq.</b> solvent and made into a gel state by a matrix <b>polymer</b> , and the gel <b>electrolyte</b> contains vinylene carbonate or deriv. thereof in the amt. not less than 0.05 wt% and not greater than 5 wt%. This gel electrolyte exhibits an excellent chem. stability with the neg. electrode, strength, and liq.-retention characteristic. This gel electrolyte enables to obtain a gel electrolyte cell satisfying the cell capacity, cycle characteristic, load characteristic, and low-temp. characteristic.				



ST **battery** gel electrolyte  
 IT **Battery** electrolytes  
 Gels  
 (gel electrolyte **battery**)  
 IT Fluoropolymers, uses  
 Polyoxyalkylenes, uses  
 RL: DEV (Device component use); USES (Uses)  
 (gel electrolyte **battery**)  
 IT Lithium alloy, base  
 RL: DEV (Device component use); USES (Uses)  
 (gel electrolyte **battery**)  
 IT 7429-90-5, Aluminum, uses  
 RL: DEV (Device component use); USES (Uses)  
 (current collector; gel electrolyte **battery**)  
 IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 872-36-6,  
 Vinylene carbonate 7439-93-2, Lithium, uses 7440-44-0, Carbon, uses  
 7791-03-9, Lithium perchlorate **9011-17-0**, Hexafluoropropylene-  
 vinylidene fluoride **copolymer** 12190-79-3, Cobalt lithium oxide  
 colio2 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium  
 hexafluorophosphate **24937-79-9**, PvdF 25014-41-9,  
 Polyacrylonitrile 25067-61-2, Polymethacrylonitrile 25322-68-3, Peo  
 25322-69-4, Polypropylene oxide 90076-65-6 113066-89-0, Cobalt lithium  
 nickel oxide Co0.2LiNi0.8O2 132843-44-8  
 RL: DEV (Device component use); USES (Uses)  
 (gel **electrolyte battery**)  
 IT 96-48-0, .gamma.-Butyrolactone 452-10-8, 2,4-Difluoroanisole  
 7782-42-5, Graphite, uses 167951-81-7  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (gel electrolyte **battery**)

RE.CNT 15 THERE ARE 15 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; PATENT ABSTRACTS OF JAPAN 1995, V1995(10)
- (2) Anon; PATENT ABSTRACTS OF JAPAN 1998, V1998(02)
- (3) Anon; PATENT ABSTRACTS OF JAPAN 1999, V1999(08)
- (4) Anon; PATENT ABSTRACTS OF JAPAN 1999, V1999(14)
- (5) Barker, J; US 5712059 A 1998 HCAPLUS
- (6) Cit Alcatel; EP 1009057 A 2000 HCAPLUS
- (7) Mitchell, P; WO 9944246 A 1999 HCAPLUS
- (8) Mitsui Chem Inc; JP 11260401 A 1999 HCAPLUS
- (9) Ozawa, A; JP 09270271 A 1997 HCAPLUS
- (10) Sanyo Electric Co; EP 1022797 A 2000 HCAPLUS
- (11) Sanyo Electric Co Ltd; JP 07192756 A 1995 HCAPLUS
- (12) Sony Corp; EP 1056142 A 2000 HCAPLUS
- (13) Sony Corp; EP 1063719 A 2000 HCAPLUS
- (14) Tokyo Shibaura Electric Co; EP 0997960 A 2000 HCAPLUS
- (15) Ube Ind Ltd; JP 11067266 A 1999 HCAPLUS

IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride  
**copolymer 24937-79-9**, PvdF  
 RL: DEV (Device component use); USES (Uses)  
 (gel **electrolyte battery**)

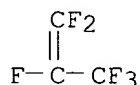
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

CM 1

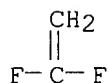
CRN 116-15-4

CMF C3 F6



CM 2

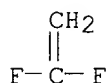
CRN 75-38-7  
CMF C2 H2 F2



RN 24937-79-9 HCAPLUS  
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 16 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2001:225639 HCAPLUS  
DN 134:240156  
TI Electrochemical devices  
IN Kano, Koji; Umifuji, Hideki; Fujiwara, Aiichiro; Okuyama, Akio  
PA Toshiba Battery Co., Ltd., Japan; Toshiba Corp.  
SO Jpn. Kokai Tokkyo Koho, 11 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M010-40  
ICS H01M010-40; C08F014-22; H01G009-035  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001085061	A2	20010330	JP 1999-261169	19990914
AB	The devices, e.g., secondary Li <b>batteries</b> and double layer capacitors, use cathodes and/or anodes having a collector coated with an active mass layer, contg. a <b>nonaq. electrolyte soln.</b> retained in a vinylidene fluoride based polymer having a melt <b>viscosity</b> .gtoreq.5000 Pa/s at 230.degree./100s-1.				
ST	secondary lithium <b>battery</b> electrode vinylene fluoride polymer; double layer capacitor vinylene fluoride polymer; melt <b>viscosity electrolyte</b> retaining <b>polymer</b> electrochem device				
IT	<b>Battery</b> electrodes <b>Battery</b> electrolytes				

(controlled melt **viscosity** of **electrolyte soln.**  
retaining **polymers** for secondary lithium **battery**  
electrodes)

IT Capacitors  
(double layer; controlled melt **viscosity** of **nonaq.**  
**electrolyte soln.** retaining **polymers** for  
double layer capacitor electrodes)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3,  
Lithium hexafluorophosphate  
RL: DEV (Device component use); USES (Uses)  
(controlled melt **viscosity** of **nonaq.**  
**electrolyte soln.** retaining **polymers** for  
electrochem. device electrodes)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(controlled melt **viscosity** of **nonaq.**  
**electrolyte soln.** retaining **polymers** for  
electrochem. device electrodes)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(controlled melt **viscosity** of **nonaq.**  
**electrolyte soln.** retaining **polymers** for  
electrochem. device electrodes)

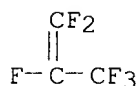
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

CRN 116-15-4

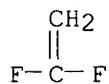
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 17 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 2001:225638 HCAPLUS

DN 134:240155

TI Electrochemical devices

IN Kano, Koji; Umifuji, Hideki; Kaide, Aiichiro; Okuyama, Tetsuo

PA Toshiba Battery Co., Ltd., Japan; Toshiba Corp.

SO Jpn. Kokai Tokyo Koho, 15 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M010-40; C08F014-22; H01M004-62

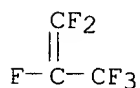
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001085060	A2	20010330	JP 1999-261168	19990914
AB	The devices, e.g., secondary Li <b>batteries</b> and double layer capacitors, use cathodes and/or anodes having a collector coated with an active mass layer, contg. a <b>nonaq. electrolyte soln.</b> retained in a vinylidene fluoride based <b>polymer</b> , and separators contg. an <b>electrolyte soln.</b> retained in a vinylene fluoride base polymer; where the polymer in the electrodes has a melt <b>viscosity</b> .gtoreq.5000 Pa/s at 230.degree./100s-1. The melt <b>viscosity</b> of the polymer in the separator is preferably 1000-3000 Pa/s at 230.degree./100s-1.				
ST	secondary lithium <b>battery</b> vinylene fluoride polymer; double layer capacitor vinylene fluoride polymer; melt <b>viscosity electrolyte</b> retaining <b>polymer</b> lithium <b>battery</b>				
IT	Fluoropolymers, uses RL: DEV (Device component use); PRP (Properties); USES (Uses) (controlled melt <b>viscosity</b> of <b>electrolyte</b> retaining <b>polymers</b> for electrochem. device electrodes and separators)				
IT	<b>Battery</b> electrolytes Secondary <b>battery</b> separators (controlled melt <b>viscosity</b> of <b>electrolyte</b> retaining <b>polymers</b> for electrodes and separators in secondary lithium <b>batteries</b> )				
IT	Capacitors (double layer; controlled melt <b>viscosity</b> of <b>electrolyte</b> retaining <b>polymers</b> for electrodes and separators in double layer capacitors)				
IT	Secondary <b>batteries</b> (lithium; controlled melt <b>viscosity</b> of <b>electrolyte</b> retaining <b>polymers</b> for electrodes and separators in secondary lithium <b>batteries</b> )				
IT	96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (controlled melt <b>viscosity</b> of <b>electrolyte</b> retaining <b>polymers</b> for electrochem. device electrodes and separators)				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Poly(vinylidene fluoride) RL: DEV (Device component use); PRP (Properties); USES (Uses) (controlled melt <b>viscosity</b> of <b>electrolyte</b> retaining <b>polymers</b> for electrochem. device electrodes and separators)				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Poly(vinylidene fluoride) RL: DEV (Device component use); PRP (Properties); USES (Uses) (controlled melt <b>viscosity</b> of <b>electrolyte</b> retaining <b>polymers</b> for electrochem. device electrodes and separators)				
RN	9011-17-0 HCAPLUS				
CN	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)				

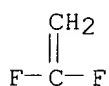
CM 1

CRN 116-15-4  
CMF C3 F6



CM 2

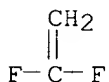
CRN 75-38-7  
CMF C2 H2 F2



RN 24937-79-9 HCAPLUS  
CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 18 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 2000:877107 HCAPLUS  
DN 134:31221  
TI Electrodes for secondary nonaqueous **batteries** and their  
manufacture  
IN Nakano, Makoto  
PA Japan Energy Corp., Japan  
SO Jpn. Kokai Tokkyo Koho, 10 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M004-02  
ICS H01M004-02; H01M004-04; H01M004-58; H01M004-62; H01M004-74;  
H01M010-40  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000348710	A2	20001215	JP 1999-159212	19990607
AB	The electrodes, contg. active mass and a thermoplastic binder and having 0.01-10 .mu.m-size pores in which electrolyte solns. invade, have av. pore size (dav) 0.1-1 .mu.m, where dav = 4V/A (V is a pore vol. measured by Hg pressure method; A is a pore surface area measured by Hg pressure method).				

The electrodes are manufd. by extrusion molding of a mixt. contg. active mass, a binder, and a plasticizer under shear rate .gtoreq.103 s-1 and shear **viscosity** .ltoreq.101 MPa and then substituting the plasticizer with an electrolyte soln. The electrodes, having high film thickness and capacity, are obtained without uses of org. solvents.

ST nonaq **battery** electrode manuf pore size plasticizer

IT **Battery** anodes

**Battery** cathodes

**Battery** electrodes

Extrusion, nonbiological

Plasticizers

Pore size

(electrodes having controlled pore size manufd. by substitution of plasticizer with **electrolyte soln.** for

**nonaq. batteries**)

IT Carbon fibers, uses

RL: DEV (Device component use); USES (Uses)

(mesophase pitch-based, anodes; electrodes having controlled pore size manufd. by substitution of plasticizer with **electrolyte**

**soln.** for **nonaq. batteries**)

IT 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(anode; electrodes having controlled pore size manufd. by substitution of plasticizer with **electrolyte soln.** for

**nonaq. batteries**)

IT 9011-17-0, Kynar 2801

RL: DEV (Device component use); USES (Uses)

(binder; electrodes having controlled pore size manufd. by substitution of plasticizer with **electrolyte soln.** for

**nonaq. batteries**)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4)

RL: DEV (Device component use); USES (Uses)

(cathode; electrodes having controlled pore size manufd. by substitution of plasticizer with **electrolyte soln.** for

**nonaq. batteries**)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(electrolyte soln.; electrodes having controlled pore size manufd. by substitution of plasticizer with **electrolyte soln.** for

**nonaq. batteries**)

IT 84-74-2, Dibutyl phthalate

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(plasticizer; electrodes having controlled pore size manufd. by substitution of plasticizer with **electrolyte soln.** for

**nonaq. batteries**)

IT 9011-17-0, Kynar 2801

RL: DEV (Device component use); USES (Uses)

(binder; electrodes having controlled pore size manufd. by substitution of plasticizer with **electrolyte soln.** for

**nonaq. batteries**)

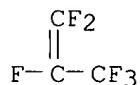
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

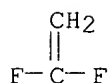
CRN 116-15-4

CMF C3 F6



CM 2

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 19 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:837186 HCAPLUS

DN 134:6996

TI Secondary **nonaqueous electrolyte batteries**

IN Sasayama, Masaaki; Maruyama, Mutsuhiro; Nanpo, Takashi

PA Asahi Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 16 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M010-40; H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000331715	A2	20001130	JP 1999-137778	19990518
AB	The <b>batteries</b> have cathodes, Li intercalating anodes, separators, and a <b>nonaq. electrolyte soln.</b> contg. a solute and a solvent sealed in a packaging material; where the solvent contains .gamma.-butyrolactone as main component, the solute contains .gtoreq.2 salts, and the <b>battery</b> is filled with CO2.				
ST	secondary lithium <b>battery</b> electrolyte butyrolactone solvent; carbon dioxide secondary lithium <b>battery</b> ; mixed salt electrolyte secondary lithium <b>battery</b>				
IT	Secondary <b>batteries</b> (lithium; carbon dioxide filled secondary lithium <b>batteries</b> with mixed salt electrolytes in butyrolactone based solvent)				
IT	<b>Battery</b> electrolytes (mixed salt electrolytes in butyrolactone based solvent for carbon dioxide filled secondary lithium <b>batteries</b> )				
IT	124-38-9, Carbon dioxide, uses RL: DEV (Device component use); USES (Uses) (carbon dioxide filled secondary lithium <b>batteries</b> with mixed salt electrolytes in butyrolactone based solvent)				
IT	96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 14283-07-9, Lithium fluoroborate 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); USES (Uses) (mixed salt electrolytes in butyrolactone based solvent for carbon dioxide filled secondary lithium <b>batteries</b> )				

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
copolymer  
RL: DEV (Device component use); USES (Uses)  
(polymer electrolytes contg. mixed salt in  
butyrolactone based solvent for carbon dioxide filled secondary lithium  
batteries)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
copolymer  
RL: DEV (Device component use); USES (Uses)  
(polymer electrolytes contg. mixed salt in  
butyrolactone based solvent for carbon dioxide filled secondary lithium  
batteries)

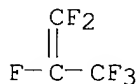
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

CRN 116-15-4

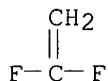
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 20 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:686824 HCAPLUS

DN 133:284091

TI Method for manufacture of lithium secondary battery

IN Maruo, Hiroyuki

PA Mitsubishi Chemical Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40  
ICS H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2000268876	A2	20000929	JP 1999-71653	19990317

AB The method comprises coating a Li+-contg. non-aq.  
electrolyte soln. contg. a gelatinizing agent on pos.  
and/or neg. electrode at a speed .gtoreq.5 mm/s but less than a value

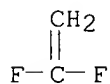


detd. by the **viscosity** of the soln. and treating the coated electrodes or porous film under reduced pressure, and laminating the electrodes together through a **non-aq. electrolyte** liq. The **non-aq. electrolyte** liq. is coated on a film having a thickness 5-20 .mu.m and pore diam. 0.03-10 .mu.m. The electrodes are porous films having a thickness 20-200 .mu.m, pore diam. 0.1-10 .mu.m, and porosity 20-60%.

ST lithium **battery** gelatinized electrolyte  
 IT Secondary **batteries**  
     (lithium; manuf. of lithium secondary **battery** with coating of gelatinized electrolyte on electrodes)  
 IT Carbon black, uses  
     Fluoropolymers, uses  
     RL: TEM (Technical or engineered material use); USES (Uses)  
         (manuf. of lithium secondary **battery** with coating of gelatinized electrolyte on electrodes)  
 IT 108-32-7, Propylene carbonate 872-50-4, N-Methylpyrrolidone, uses 7791-03-9, Lithium perchlorate **24937-79-9**, Polyvinylidene fluoride 26570-48-9, Photomer4050 28961-43-5, Photomer4158  
     RL: TEM (Technical or engineered material use); USES (Uses)  
         (manuf. of lithium secondary **battery** with coating of gelatinized **electrolyte** on electrodes)  
 IT **24937-79-9**, Polyvinylidene fluoride  
     RL: TEM (Technical or engineered material use); USES (Uses)  
         (manuf. of lithium secondary **battery** with coating of gelatinized **electrolyte** on electrodes)  
 RN **24937-79-9** HCAPLUS  
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 21 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2000:686819 HCAPLUS  
 DN 133:284086  
 TI Method for manufacture of lithium secondary **battery**  
 IN Maruo, Hiroyuki; Adachi, Koji; Maeda, Kimiharu  
 PA Mitsubishi Chemical Corp., Japan  
 SO Jpn. Kokai Tokkyo Koho, 8 pp.  
     CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
     ICS H01M004-04  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

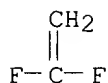
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000268870	A2	20000929	JP 1999-71652	19990317
AB	The method comprises coating a Li+-contg. <b>non-aq. electrolyte</b> soln. contg. a gelatinizing agent on pos.				

and/or neg. electrode at a speed .gtoreq.5 mm/s but less than a value detd. by the **viscosity** of the soln., and laminating the electrodes together. The electrodes are porous films having a thickness 2-50 .mu.m, pore diam. 0.03-10 .mu.m, and porosity 20-60%.

ST lithium **battery** gelatinized electrolyte  
 IT Secondary **batteries**  
     (lithium; manuf. of lithium secondary **battery** with coating of gelatinized electrolyte on electrodes)  
 IT Carbon black, uses  
     Fluoropolymers, uses  
     RL: TEM (Technical or engineered material use); USES (Uses)  
     (manuf. of lithium secondary **battery** with coating of gelatinized electrolyte on electrodes)  
 IT 108-32-7, Propylene carbonate 872-50-4, N-Methylpyrrolidone, uses  
     7791-03-9, Lithium perchlorate **24937-79-9**, Polyvinylidene fluoride 26570-48-9, Photomer4050 28961-43-5, Photomer4158  
     RL: TEM (Technical or engineered material use); USES (Uses)  
     (manuf. of lithium secondary **battery** with coating of gelatinized **electrolyte** on electrodes)  
 IT **24937-79-9**, Polyvinylidene fluoride  
     RL: TEM (Technical or engineered material use); USES (Uses)  
     (manuf. of lithium secondary **battery** with coating of gelatinized **electrolyte** on electrodes)  
 RN **24937-79-9** HCAPLUS  
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 22 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 2000:643399 HCAPLUS  
 DN 133:210707  
 TI Manufacture of cathode materials for secondary **polymer electrolyte** lithium **batteries**  
 IN Kumagaya, Katsuya; Umifuji, Hideki; Kano, Koji  
 PA Toshiba Battery Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
     CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M004-04  
     ICS H01M004-02; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000251881	A2	20000914	JP 1999-53762	19990302
AB	The cathodes, having a mixt. of an active mass and an un-impregnated <b>nonaq. electrolyte soln.</b> retaining <b>polymer</b> , are prepd. by kneading the active mass with the polymer and an org. solvent to form a paste contg. .ltoreq.2.0% water, and				

applying the paste on a collector or support.

ST secondary **polymer electrolyte** lithium **battery**  
cathode manuf

IT **Battery** cathodes  
(manuf. of cathodes contg. **electrolyte** retaining  
**polymers** with controlled water content for secondary lithium  
**batteries**)

IT 67-64-1, Acetone, uses 84-74-2, Dbp  
RL: NUU (Other use, unclassified); USES (Uses)  
(in manuf. of cathodes contg. **electrolyte** retaining  
**polymers** with controlled water content for secondary lithium  
**batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer** 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PROC (Process); USES (Uses)  
(manuf. of cathodes contg. **electrolyte** retaining  
**polymers** with controlled water content for secondary lithium  
**batteries**)

IT 7732-18-5, Water, miscellaneous  
RL: MSC (Miscellaneous)  
(manuf. of cathodes contg. **electrolyte** retaining  
**polymers** with controlled water content for secondary lithium  
**batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PROC (Process); USES (Uses)  
(manuf. of cathodes contg. **electrolyte** retaining  
**polymers** with controlled water content for secondary lithium  
**batteries**)

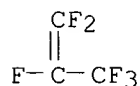
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

CRN 116-15-4

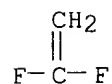
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



AN 2000:592491 HCAPLUS  
 DN 133:196001  
 TI Gel electrolyte **battery**  
 IN Shibuya, Mashio; Goto, Shuji  
 PA Sony Corp., Japan  
 SO Eur. Pat. Appl., 21 pp.  
 CODEN: EPXXDW  
 DT Patent  
 LA English  
 IC ICM H01M010-40  
 ICS H01M006-22  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1030398	A1	20000823	EP 2000-102764	20000210
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2000243447	A2	20000908	JP 1999-41456	19990219
	CN 1267926	A	20000927	CN 2000-108303	20000218
	CN 1267926	A	20000927	CN 2000-108303	20000218
PRAI	JP 1999-41456	A	19990219		

AB A gel **electrolyte** comprised of a **nonaq.**  
**electrolytic soln.** immersed in a matrix **polymer**  
 , in which ion cond. of a solvent is improved and superior cyclic  
 characteristics are achieved. To this end, the gel **electrolyte**  
 includes an **electrolyte**, a matrix **polymer** and a  
**nonaq.** solvent. The **nonaq.** solvent is a mixed solvent  
 of ethylene carbonate (EC), propylene carbonate (PC) and  
 .gamma.-butyrolactone (GBL). The **nonaq.** solvent is of a wt.  
 compn. in an area in a triangular phase diagram (EC, PC, GBL) surrounded  
 by a point (70, 30, 0), a point (55, 15, 30), a point (15, 55, 30) and a  
 point (30, 70, 0). A gel electrolyte **battery** employing this  
 electrolyte is also disclosed.

ST **battery** gel electrolyte  
 IT **Battery** electrolytes  
 Secondary **batteries**  
 (gel electrolyte **battery**)

IT Fluoropolymers, uses  
 Polyoxyalkylenes, uses  
 RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (gel electrolyte **battery**)

IT 7782-42-5, Graphite, uses 12190-79-3, Cobalt lithium oxide colio2  
 113066-91-4, Cobalt lithium nickel oxide Co0.8LiNi0.2O2  
 RL: DEV (Device component use); USES (Uses)  
 (gel electrolyte **battery**)

IT 96-48-0, .gamma.-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7,  
 Propylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0,  
 Hexafluoropropylene-vinylidene fluoride **copolymer** 21324-40-3,  
 Lithium hexafluorophosphate 24937-79-9, Polyvinylidene fluoride  
 25322-68-3, Peo 25322-69-4, Polypropylene oxide 90076-65-6  
 RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (gel **electrolyte battery**)

IT 100-66-3D, Anisole, fluoro deriv.  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (gel electrolyte **battery**)

RE.CNT 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Anon; PATENT ABSTRACTS OF JAPAN 1999, V1999(04)
- (2) Asahi Chemical Ind; EP 0862232 A 1998 HCAPLUS
- (3) Nec Corp; JP 11007981 A 1999 HCAPLUS
- (4) Sony Corp; EP 0724305 A 1996 HCAPLUS
- (5) Sony Corp; EP 0746050 A 1996 HCAPLUS
- (6) Sony Corp; EP 0892452 A 1999 HCAPLUS

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
 copolymer 24937-79-9, Polyvinylidene fluoride  
 RL: DEV (Device component use); TEM (Technical or engineered material  
 use); USES (Uses)  
 (gel electrolyte battery)

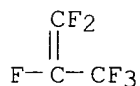
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

CM 1

CRN 116-15-4

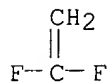
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



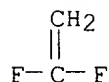
RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 24 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:532840 HCAPLUS

DN 133:153179

TI Polymer compositions for electrolytes, the  
 electrolytes, and batteries

IN Kuzurao, Isao; Horie, Katsuo; Ichikawa, Yukio; Nagai, Aisaku

PA Kureha Chemical Industry Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01B001-06; H01G009-025; C08F214-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000215917	A2	20000804	JP 1999-48721	19990120
AB	The polymers are reaction products of a <b>copolymer</b> , contg. .gtoreq.50% vinylidene fluoride and carboxyl and/or epoxy groups, and a vinyl compd., having .gtoreq.1 carboxyl and/or epoxy reactive groups. <b>Polymer electrolytes</b> have the <b>polymer</b> impregnated with a <b>nonaq. electrolyte soln.</b> Secondary Li <b>batteries</b> have the electrolyte between Li intercalating cathodes and anodes.				
ST	secondary lithium <b>battery electrolyte polymer</b> substrate; vinylidene fluoride <b>copolymer</b> compn <b>battery</b> electrolyte				
IT	<b>Battery electrolytes</b> (compsn. of <b>polymer</b> substrates for <b>electrolytes</b> for secondary lithium <b>batteries</b> )				
IT	<b>286961-85-1 286961-86-2</b> RL: DEV (Device component use); USES (Uses) (compsn. of <b>polymer</b> substrates for solid <b>electrolytes</b> in secondary lithium <b>batteries</b> )				
IT	<b>40528-67-4P</b> , Hexafluoropropylene-trifluoroethylene-vinylidene fluoride <b>copolymer 186773-67-1P 286961-81-7P 286961-87-3P</b> RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process) (prepolymers for <b>polymer</b> substrates for solid <b>electrolytes</b> in secondary lithium <b>batteries</b> )				
IT	<b>286961-85-1 286961-86-2</b> RL: DEV (Device component use); USES (Uses) (compsn. of <b>polymer</b> substrates for solid <b>electrolytes</b> in secondary lithium <b>batteries</b> )				
RN	<b>286961-85-1 HCAPLUS</b>				
CN	2-Butenedioic acid (2Z)-, monomethyl ester, polymer with 1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene, oxiranylmethyl 2-methyl-2-propenoate and trifluoroethene (9CI) (CA INDEX NAME)				

CM 1

CRN 3052-50-4

CMF C5 H6 O4

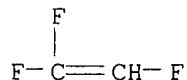
CDES 2:Z

Double bond geometry as shown.



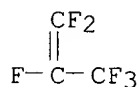
CM 2

CRN 359-11-5  
CMF C2 H F3



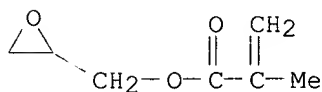
CM 3

CRN 116-15-4  
CMF C3 F6



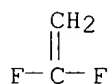
CM 4

CRN 106-91-2  
CMF C7 H10 O3



CM 5

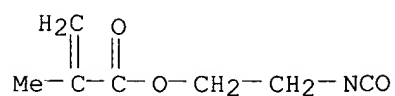
CRN 75-38-7  
CMF C2 H2 F2



RN 286961-86-2 HCAPLUS  
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with  
1,1-difluoroethene; 1,1,2,3,3,3-hexafluoro-1-propene, 2-isocyanatoethyl  
2-methyl-2-propenoate and trifluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 30674-80-7  
CMF C7 H9 N O3



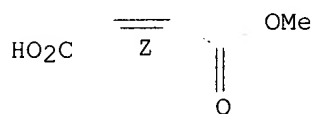
CM 2

CRN 3052-50-4

CMF C5 H6 O4

CDES 2:Z

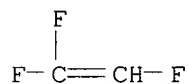
Double bond geometry as shown.



CM 3

CRN 359-11-5

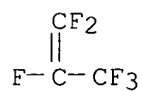
CMF C2 H F3



CM 4

CRN 116-15-4

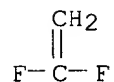
CMF C3 F6



CM 5

CRN 75-38-7

CMF C2 H2 F2



IT 40528-67-4P, Hexafluoropropylene-trifluoroethylene-vinylidene  
fluoride copolymer 186773-67-1P 286961-81-7P  
286961-87-3P



RL: IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process)  
(prepolymers for **polymer** substrates for solid **electrolytes** in secondary lithium **batteries**)

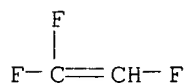
RN 40528-67-4 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene and trifluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 359-11-5

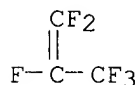
CMF C2 H F3



CM 2

CRN 116-15-4

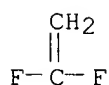
CMF C3 F6



CM 3

CRN 75-38-7

CMF C2 H2 F2



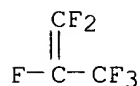
RN 186773-67-1 HCAPLUS

CN Oxirane, [(2-propenyloxy)methyl]-, polymer with 1,1-difluoroethene and 1,1,2,3,3,3-hexafluoro-1-propene (9CI) (CA INDEX NAME)

CM 1

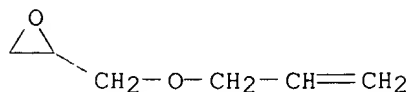
CRN 116-15-4

CMF C3 F6



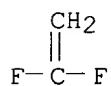
CM 2

CRN 106-92-3  
CMF C6 H10 O2



CM 3

CRN 75-38-7  
CMF C2 H2 F2

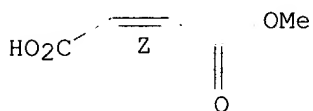


RN 286961-81-7 HCAPLUS  
CN 2-Butenedioic acid (2Z)-, monomethyl ester, polymer with  
1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and trifluoroethene  
(9CI) (CA INDEX NAME)

CM 1

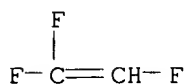
CRN 3052-50-4  
CMF C5 H6 O4  
CDES 2:Z

Double bond geometry as shown.



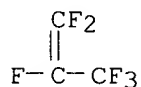
CM 2

CRN 359-11-5  
CMF C2 H F3



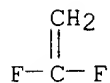
CM 3

CRN 116-15-4  
CMF C3 F6



CM 4

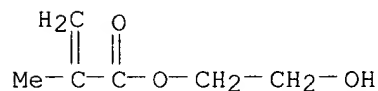
CRN 75-38-7  
CMF C2 H2 F2



RN 286961-87-3 HCAPLUS  
CN 2-Propenoic acid, 2-methyl-, 2-hydroxyethyl ester, polymer with  
1,1-difluoroethene, 1,1,2,3,3,3-hexafluoro-1-propene and  
[(2-propenyloxy)methyl]oxirane (9CI) (CA INDEX NAME)

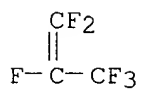
CM 1

CRN 868-77-9  
CMF C6 H10 O3



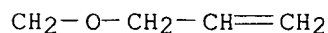
CM 2

CRN 116-15-4  
CMF C3 F6



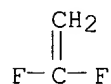
CM 3

CRN 106-92-3  
CMF C6 H10 O2



CM 4

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 25 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:362800 HCAPLUS

DN 133:7055

TI **Polymer-containing non-aqueous electrolyte lithium secondary battery**

IN Kano, Koji

PA Toshiba Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000149990	A2	20000530	JP 1998-312727	19981104

AB This **battery** comprises an elec. power generating unit constituted of a cathode, an anode, and an electrolytic layer: and the resp. components of the unit contain a non-**electrolytic** soln. and a **polymer** capable of retaining the non-**electrolytic** soln. and having 20-40% swelling ratio. The content of the non-aq. **electrolytic soln.** in the elec. power generating unit is controlled to be 25-50 vol.%. The **battery** is provided with both high load discharging performance and a long cycle life.

ST **electrolyte anode cathode polymer addn battery**

IT Mesophase pitch

(anode active mass contg. carbon fibers from; lithium secondary **battery** with high discharge capacity and long cycle life by addn. of **polymer** to non-aq. **electrolytic soln.**)

IT Carbon fibers, uses

RL: DEV (Device component use); USES (Uses)

(anode active mass contg.; lithium secondary **battery** with high discharge capacity and long cycle life by addn. of **polymer** to non-aq. **electrolytic soln.**)

IT Secondary **batteries**

(lithium; lithium secondary **battery** with high discharge capacity and long cycle life by addn. of **polymer** to non-aq. **electrolytic soln.**)

IT **Battery electrolytes**

(**polymer** addn. to; lithium secondary **battery** with high discharge capacity and long cycle life by addn. of **polymer** to non-aq. **electrolytic soln.**)

IT **Battery anodes**

**Battery cathodes**

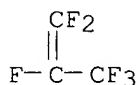
(**polymer**-contg. **electrolytic soln.** in; lithium secondary **battery** with high discharge capacity and long cycle life by addn. of **polymer** to non-aq.

- electrolytic soln.)
- IT 84-74-2, Dibutyl phthalate  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (addn. together with polymer; lithium secondary **battery** with  
 high discharge capacity and long cycle life by addn. of **polymer**  
 to **non-aq. electrolytic soln.**)
- IT 12057-17-9, Lithium manganese oxide (LiMn2O4)  
 RL: DEV (Device component use); USES (Uses)  
 (cathode active mass contg.; lithium secondary **battery** with  
 high discharge capacity and long cycle life by addn. of **polymer**  
 to **non-aq. electrolytic soln.**)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (lithium secondary **battery** with high discharge capacity and  
 long cycle life by addn. of **polymer** to **non-**  
**aq. electrolytic soln.**)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
 RL: MOA (Modifier or additive use); USES (Uses)  
 (lithium secondary **battery** with high discharge capacity and  
 long cycle life by addn. of **polymer** to **non-**  
**aq. electrolytic soln.**)
- RN 9011-17-0 HCAPLUS
- CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

CM 1

CRN 116-15-4

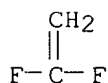
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 26 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 2000:34387 HCAPLUS

DN 132:66702

TI **Nonaqueous electrolyte batteries**

IN Hashizume, Shozo; Yagasaki, Eriko; Toriyama, Junichi; Yasuda, Hideo

PA Japan Storage Battery Co., Ltd., Japan; Kansai Electric Power Co.

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

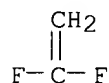
DT Patent

LA Japanese  
 IC ICM H01M010-40  
 ICS H01M010-40; H01M002-18  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2000012097	A2	20000114	JP 1998-193722	19980623
AB	The <b>batteries</b> have a porous <b>polymer electrolyte</b> membrane, swellable or wettable by a <b>nonaq. electrolyte soln.</b> , and cathodes and/or anode held in tubes or pockets of the porous <b>polymer electrolyte</b> membrane. Preferably, the <b>polymer electrolyte</b> contains poly(vinylidene fluoride), PVC, polyacrylonitrile, or their <b>copolymers</b> ; and the polymer membrane has 20-90% porosity.				
ST	<b>battery electrode porous polymer electrolyte</b> cover				
IT	<b>Battery electrodes</b> (electrodes covered with porous <b>polymer electrolyte</b> membrane tubes or bags for secondary lithium <b>batteries</b> )				
IT	Fluoropolymers, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (electrodes covered with porous <b>polymer electrolyte</b> membrane tubes or bags for secondary lithium <b>batteries</b> )				
IT	<b>Battery electrolytes</b> ( <b>electrolyte</b> -swellable or -wettable porous <b>polymer electrolyte</b> for covering electrodes in secondary lithium <b>batteries</b> )				
IT	Secondary <b>batteries</b> (lithium; secondary lithium <b>batteries</b> contg. electrodes covered with porous <b>polymer electrolyte</b> membrane tubes or bags)				
IT	7782-42-5, Graphite, uses 9002-86-2, PVC 12190-79-3, Cobalt lithium oxide (CoLiO <sub>2</sub> ) <b>24937-79-9</b> , Poly(vinylidene fluoride) 25014-41-9, Polyacrylonitrile RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (electrodes covered with porous <b>polymer electrolyte</b> membrane tubes or bags for secondary lithium <b>batteries</b> )				
IT	24937-78-8, Ethylene-vinyl acetate <b>copolymer</b> RL: NUU (Other use, unclassified); USES (Uses) (glues for porous <b>polymer electrolyte</b> membrane tubes or bags for electrodes in secondary lithium <b>batteries</b> )				
IT	<b>24937-79-9</b> , Poly(vinylidene fluoride) RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (electrodes covered with porous <b>polymer electrolyte</b> membrane tubes or bags for secondary lithium <b>batteries</b> )				
RN	24937-79-9 HCAPLUS				
CN	Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)				

CM 1

CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 27 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:756217 HCAPLUS

DN 132:4778

TI Cathode current collector of aluminum foil for **battery** and  
**non-aqueous electrolytic** secondary  
**battery** comprising the collector

IN Kazuhara, Manabu; Hiratsuka, Kazuya; Ikeda, Katsuji; Kawasato, Takeshi;  
Higuchi, Yoshiaki

PA Asahi Glass Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.  
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M004-64

ICS H01M004-02; H01M004-62; H01M010-40; C23F001-00

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 56

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11329448	A2	19991130	JP 1998-133845	19980515
AB	This cathode current collector of a <b>non-aq. electrolytic</b> secondary <b>battery</b> is an Al foil having a surface roughened layer with 1-5 .mu.m av. thickness on the surface and .gtoreq.3 kg-mm breaking energy measured by a defined method. The <b>non-aq. electrolytic</b> secondary <b>battery</b> comprises an anode, a cathode whose current collector is the defined Al foil, and a <b>non-aq. soln.</b> contg. a Li salt solute and a <b>non-aq.</b> solvent. The adhesion strength of the collector to a <b>polymer electrolytic</b> substance and to the cathode active mass is heightened to give a <b>non-aq. electrolytic</b> secondary <b>battery</b> with excellent charging and discharging cycles owing to low inner resistance and high durability.				
ST	cathode aluminum foil collector <b>battery</b> ; adhesion strength active mass collector cathode				
IT	Fluoropolymers, uses RL: TEM (Technical or engineered material use); USES (Uses) (cathode binder; <b>non-aq. electrolytic battery</b> comprising cathode comprising aluminum foil with controlled surface roughness and breaking energy as collector for high capacity and good cycle properties)				
IT	Alkenes, uses RL: TEM (Technical or engineered material use); USES (Uses) (fluoro, cathode binder; <b>non-aq. electrolytic battery</b> comprising cathode comprising aluminum foil with controlled surface roughness and breaking energy as collector for high capacity and good cycle properties)				
IT	<b>Battery</b> cathodes ( <b>non-aq. electrolytic battery</b> comprising cathode comprising aluminum foil with controlled surface roughness and breaking energy as collector for high capacity and good cycle properties)				

IT Secondary batteries  
 (non-aq. electrolytic; non-aq. electrolytic battery comprising cathode comprising aluminum foil with controlled surface roughness and breaking energy as collector for high capacity and good cycle properties)

IT 75-38-7D, Vinylidene fluoride, **copolymer** with perfluoroalkyl vinyl ether 9002-84-0, Polytetrafluoroethylene 9010-75-7, Chlorotrifluoroethylene-vinylidene fluoride **copolymer** 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 24937-79-9, Poly(vinylidene fluoride) 25190-89-0, Tetrafluoroethylene-hexafluoropropylene-vinylidene fluoride **copolymer** 57216-48-5, Chlorotrifluoroethylene-vinylene carbonate **copolymer**

RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathode binder; non-aq. electrolytic **battery** comprising cathode comprising aluminum foil with controlled surface roughness and breaking energy as collector for high capacity and good cycle properties)

IT 7429-90-5, Aluminum, uses 37197-42-5

RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (cathode collector; non-aq. electrolytic **battery** comprising cathode comprising aluminum foil with controlled surface roughness and breaking energy as collector for high capacity and good cycle properties)

IT 9010-75-7, Chlorotrifluoroethylene-vinylidene fluoride **copolymer** 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 24937-79-9, Poly(vinylidene fluoride) 25190-89-0, Tetrafluoroethylene-hexafluoropropylene-vinylidene fluoride **copolymer**

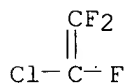
RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathode binder; non-aq. electrolytic **battery** comprising cathode comprising aluminum foil with controlled surface roughness and breaking energy as collector for high capacity and good cycle properties)

RN 9010-75-7 HCAPLUS

CN Ethene, chlorotrifluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

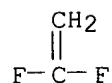
CM 1

CRN 79-38-9  
 CMF C2 C1 F3



CM 2

CRN 75-38-7  
 CMF C2 H2 F2

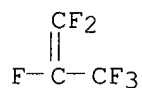




RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

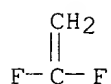
CM 1

CRN 116-15-4  
 CMF C3 F6



CM 2

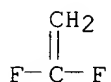
CRN 75-38-7  
 CMF C2 H2 F2



RN 24937-79-9 HCAPLUS  
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

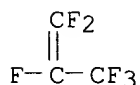
CRN 75-38-7  
 CMF C2 H2 F2



RN 25190-89-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene and  
 tetrafluoroethene (9CI) (CA INDEX NAME)

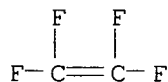
CM 1

CRN 116-15-4  
 CMF C3 F6



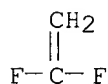
CM 2

CRN 116-14-3  
CMF C2 F4



CM 3

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 28 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:690284 HCAPLUS

DN 131:288890

TI Electrode materials for **polymer electrolyte batteries** and manufacture of the **batteries**

IN Kimishima, Takahiro

PA Toshiba Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M004-02

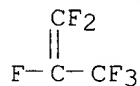
ICS H01M004-04; H01M004-62; H01M010-38; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

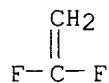
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11297308	A2	19991029	JP 1998-98689	19980410
AB	The electrode materials have gas permeability 10-100 (JIS P8117) before impregnating with a <b>nonaq. electrolyte soln.</b> The <b>batteries</b> are prepd. by placing an electrolyte retainer, having gas permeability 10-100, between an un-impregnated electrodes and impregnating the retainer and electrodes with an electrolyte soln.				
ST	<b>polymer electrolyte battery</b> electrode gas permeability				
IT	<b>Battery</b> electrodes (electrodes with controlled gas permeability before <b>electrolyte</b> impregnation for <b>polymer electrolyte batteries</b> )				
IT	Carbon fibers, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses) (electrodes with controlled gas permeability before <b>electrolyte</b> impregnation for <b>polymer electrolyte batteries</b> )				
IT	Permeability (gas; electrodes with controlled gas permeability before <b>electrolyte</b> impregnation for <b>polymer</b> )				

**electrolyte batteries)**  
 IT 12057-17-9, Lithium manganese oxide (LiMn2O4)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)  
 (electrodes with controlled gas permeability before **electrolyte** impregnation for **polymer electrolyte batteries**)  
 IT 7631-86-9, Silica, uses  
 RL: DEV (Device component use); USES (Uses)  
 (**polymer electrolytes in batteries** using electrodes with controlled gas permeability)  
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate  
 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
 copolymer 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)  
 (**polymer electrolytes in batteries** using electrodes with controlled gas permeability)  
 IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
 copolymer  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process); USES (Uses)  
 (**polymer electrolytes in batteries** using electrodes with controlled gas permeability)  
 RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)  
 CM 1  
 CRN 116-15-4  
 CMF C3 F6



CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 29 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1999:464139 HCAPLUS  
 DN 131:90262  
 TI **Polymer electrolytes and nonaqueous batteries using the electrolytes**  
 IN Katsurao, Takumi; Horie, Katsuo; Ichikawa, Yukio; Nagai, Aisaku  
 PA Kureha Kagaku Kogyo Kabushiki Kaisha, Japan  
 SO PCT Int. Appl., 30 pp.

*applicants*

CODEN: PIXXD2

DT Patent

LA Japanese

IC ICM H01B001-12

ICS H01M010-40; C08L027-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9934372	A1	19990708	WO 1998-JP5848	19981224
	W: CA, JP, KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	CA 2316299	AA	19990708	CA 1998-2316299	19981224
	EP 1043732	A1	20001011	EP 1998-961510	19981224
	R: DE, FR, GB				
PRAI	JP 1997-366969	A	19971226		
	WO 1998-JP5848	W	19981224		

AB The **electrolytes** contain a **nonaq. electrolyte soln.** and a vinylidene fluoride **copolymer**, which contains 80-97% vinylidene fluoride and having intrinsic viscosity 1.5-10 dL/g. The **batteries** are secondary Li **batteries**

ST secondary lithium **battery** electrolyte vinylidene fluoride **copolymer**

IT **Battery electrolytes**

(vinylidene fluoride **copolymers** for **polymer electrolytes** for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 9010-75-7, Chlorotrifluoroethylene-vinylidene fluoride **copolymer** 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 21324-40-3, Lithium hexafluorophosphate 25101-47-7, Chlorotrifluoroethylene-hexafluoropropylene-vinylidene fluoride **copolymer**

RL: DEV (Device component use); USES (Uses)

(vinylidene fluoride **copolymers** for **polymer electrolytes** for secondary lithium **batteries**)

RE.CNT 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Asahi Chemical Industry Co Ltd; JP 09306462 A 1997 HCAPLUS
- (2) Kureha Chemical Industry Co Ltd; JP 09289023 A 1997 HCAPLUS
- (3) Matsushita Electric Industrial Co Ltd; JP 06318454 A 1994 HCAPLUS
- (4) Sony Corp; JP 07296815 A 1995 HCAPLUS

IT 9010-75-7, Chlorotrifluoroethylene-vinylidene fluoride **copolymer** 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 25101-47-7, Chlorotrifluoroethylene-hexafluoropropylene-vinylidene fluoride **copolymer**

RL: DEV (Device component use); USES (Uses)

(vinylidene fluoride **copolymers** for **polymer electrolytes** for secondary lithium **batteries**)

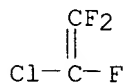
RN 9010-75-7 HCAPLUS

CN Ethene, chlorotrifluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

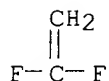
CRN 79-38-9

CMF C2 C1 F3



CM 2

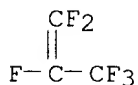
CRN 75-38-7  
CMF C2 H2 F2



RN 9011-17-0 HCAPLUS  
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

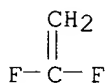
CM 1

CRN 116-15-4  
CMF C3 F6



CM 2

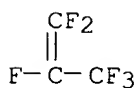
CRN 75-38-7  
CMF C2 H2 F2



RN 25101-47-7 HCAPLUS  
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with chlorotrifluoroethene and  
1,1-difluoroethene (9CI) (CA INDEX NAME)

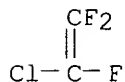
CM 1

CRN 116-15-4  
CMF C3 F6



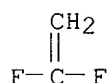
CM 2

CRN 79-38-9  
CMF C2 C1 F3



CM 3

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 30 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:427105 HCAPLUS

DN 131:90183

TI **Polymer gel electrolytes and lithium secondary batteries**

IN Amano, Kosuke; Sakauchi, Hiroshi; Yakeda, Hiroshi; Sato, Masaharu; Hasegawa, Etsuo

PA NEC Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01B001-12

ICS C08K003-10; C08L027-16; C08L051-06; H01M010-40; C08F259-08; C08F220-36

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38, 72

FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11185524	A2	19990709	JP 1997-350410	19971219
	US 6235433	B1	20010522	US 1998-217078	19981221
PRAI	JP 1997-350409	A	19971219		
	JP 1997-350410	A	19971219		
	JP 1997-354480	A	19971224		

AB The **electrolytes** consist of network **polymer** matrixes made of vinylidene fluoride polymers, compds. with .gtoreq.2 polymerizable functional groups, and compds. with carbonyl and **polymerizable** functional groups and **electrolytic** solns. comprising ionic compds. and **nonaq.** org. solvents included in the matrixes. The Li secondary **batteries** use the **polymer** gels showing good **electrolyte**-supporting ability and have high capacitance even if the size are small.

ST **polymer gel electrolyte** lithium secondary **battery**; **crosslinked polymer gel electrolyte** secondary **battery**; network **polymer**

- gel **electrolyte** secondary **battery**
- IT Secondary **batteries**  
 (lithium; network polymer gels contg. ionic compd. **nonaq.**  
 org. **soln.** as **electrolyte** in lithium secondary  
**battery**)
- IT **Crosslinking**  
 Gels  
**Polymer electrolytes**  
 (network **polymer** gels contg. ionic compd. **nonaq.**  
 org. **soln.** as **electrolyte** in lithium secondary  
**battery**)
- IT Amides, uses  
 Carbonates, uses  
 Ethers, uses  
 Lactones  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (solvents; network polymer gels contg. ionic compd. **nonaq.**  
 org. **soln.** as **electrolyte** in lithium secondary  
**battery**)
- IT 12031-65-1, Lithium nickel oxide (LiNiO<sub>2</sub>) 12057-17-9, Lithium manganese  
 oxide (LiMn<sub>2</sub>O<sub>4</sub>) 12162-79-7, Lithium manganese oxide (LiMnO<sub>2</sub>)  
 12190-79-3, Lithium cobalt oxide (LiCoO<sub>2</sub>)  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (cathode active mass; network polymer gels contg. ionic compd.  
**nonaq.** org. **soln.** as **electrolyte** in lithium  
 secondary **battery**)
- IT 7791-03-9, Lithium perchlorate 33454-82-9, Lithium  
 trifluoromethanesulfonate 132404-42-3 132843-44-8 210406-60-3  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (**electrolyte**; network **polymer** gels contg. ionic  
 compd. **nonaq.** org. **soln.** as **electrolyte**  
 in lithium secondary **battery**)
- IT 3290-92-4DP, Trimethylolpropane trimethacrylate, reaction product with  
 hexafluoropropylene-vinylidene fluoride **copolymer** and  
 carbonyl-contg. **monomers** 9011-17-0DP,  
 Hexafluoropropylene-vinylidene fluoride **copolymer**,  
**crosslinked** with trimethylolpropane trimethacrylate and  
 carbonyl-contg. **monomers**  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
 (Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (network polymer gels contg. ionic compd. **nonaq.** org.  
**soln.** as **electrolyte** in lithium secondary  
**battery**)
- IT 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium  
 hexafluorophosphate  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (network polymer gels contg. ionic compd. **nonaq.** org.  
**soln.** as **electrolyte** in lithium secondary  
**battery**)
- IT 96-48-0 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate  
 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0,  
 Methyl ethyl carbonate  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (solvents; network polymer gels contg. ionic compd. **nonaq.**  
 org. **soln.** as **electrolyte** in lithium secondary  
**battery**)
- IT 9011-17-0DP, Hexafluoropropylene-vinylidene fluoride  
**copolymer**, **crosslinked** with trimethylolpropane  
 trimethacrylate and carbonyl-contg. **monomers**  
 RL: DEV (Device component use); IMF (Industrial manufacture); TEM

(Technical or engineered material use); PREP (Preparation); USES (Uses)  
 (network polymer gels contg. ionic compd. **nonaq.** org.  
 soln. as **electrolyte** in lithium secondary  
**battery**)

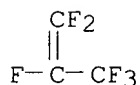
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

CM 1

CRN 116-15-4

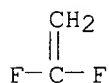
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 31 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:390274 HCAPLUS

DN 131:21353

TI **Polymer electrolytes** and secondary lithium  
**batteries** using the electrolytes

IN Nakamura, Takayuki; Ino, Tadashi; Ichikawa, Kenji; Tohata, Yoshihide

PA Daikin Industries, Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11162513	A2	19990618	JP 1997-326546	19971127
AB	The electrolytes have a F contg. <b>copolymer</b> elastomer, having a limit <b>viscosity</b> 0.1-350 mL/g, impregnates with a <b>nonaq</b> <b>electrolyte soln.</b> Preferably, the elastomer contains 35-85 mol% of vinylidene fluoride based repeating units, 13-45 mol% C3F6 base units, and 0-35 mol% C2F4 based units.				
ST	secondary lithium <b>battery</b> electrolyte fluoropolymer elastomer; limit <b>viscosity</b> lithium <b>battery polymer electrolyte</b>				
IT	<b>Battery</b> electrolytes (fluoropolymer elastomers with controlled limit <b>viscosity</b> for				



polymer electrolytes in secondary lithium  
batteries)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7791-03-9,  
Lithium perchlorate  
RL: DEV (Device component use); USES (Uses)  
(fluoropolymer elastomers with controlled limit **viscosity** for  
polymer electrolytes in secondary lithium  
batteries)

IT 25190-89-0, Hexafluoropropylene-tetrafluoroethylene-vinylidene  
fluoride copolymer  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(fluoropolymer elastomers with controlled limit **viscosity** for  
polymer electrolytes in secondary lithium  
batteries)

IT 25190-89-0, Hexafluoropropylene-tetrafluoroethylene-vinylidene  
fluoride copolymer  
RL: DEV (Device component use); PRP (Properties); USES (Uses)  
(fluoropolymer elastomers with controlled limit **viscosity** for  
polymer electrolytes in secondary lithium  
batteries)

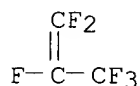
RN 25190-89-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene and  
tetrafluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

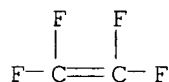
CMF C3 F6



CM 2

CRN 116-14-3

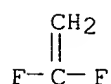
CMF C2 F4



CM 3

CRN 75-38-7

CMF C2 H2 F2



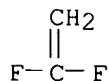
L93 ANSWER 32 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1999:325546 HCAPLUS  
 DN 130:340630  
 TI **Nonaqueous electrolyte batteries**  
 IN Toriyama, Junichi  
 PA Japan Storage Battery Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11135149	A2	19990521	JP 1997-314251	19971030
AB	The <b>batteries</b> use electrolytes contg. LiPF6 and LiClO4 in a porous polymer, wettable or swellable by a <b>nonaq. electrolyte soln.</b> The polymer is preferably poly(vinylidene fluoride), PVC, polyacrylonitrile, or their <b>copolymers.</b>				
ST	<b>battery polymer</b> lithium salt <b>electrolyte</b> ; lithium fluorophosphate <b>polymer electrolyte battery</b> ; lithium perchlorate <b>polymer electrolyte battery</b> ; polyvinylidene fluoride <b>battery electrolyte</b> ; PVC <b>battery electrolyte</b> ; polyacrylonitrile <b>battery electrolyte</b>				
IT	<b>Battery electrolytes</b> (electrolytes contg. lithium fluorophosphate and lithium perchlorate in porous polymers for secondary lithium <b>batteries</b> )				
IT	Fluoropolymers, uses RL: DEV (Device component use); USES (Uses) (electrolytes contg. lithium fluorophosphate and lithium perchlorate in porous polymers for secondary lithium <b>batteries</b> )				
IT	96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 7791-03-9, Lithium perchlorate 9002-86-2, PVC 21324-40-3, Lithium hexafluorophosphate 24937-79-9, Poly(vinylidene fluoride) 25014-41-9, Polyacrylonitrile RL: DEV (Device component use); USES (Uses) ( <b>electrolytes</b> contg. lithium fluorophosphate and lithium perchlorate in porous polymers for secondary lithium <b>batteries</b> )				
IT	24937-79-9, Poly(vinylidene fluoride) RL: DEV (Device component use); USES (Uses) ( <b>electrolytes</b> contg. lithium fluorophosphate and lithium perchlorate in porous polymers for secondary lithium <b>batteries</b> )				
RN	24937-79-9 HCAPLUS				
CN	Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)				

CM 1

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 33 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:261912 HCAPLUS

DN 130:284471

TI Secondary **polymer electrolyte batteries**

IN Suhara, Manabu; Ikeda, Katsuji; Hiratsuka, Kazuya; Kamiya, Hiroki; Tamura, Masayuki

PA Asahi Glass Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M004-02

ICS H01M004-66; H01M004-80; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11111265	A2	19990423	JP 1997-266811	19970930
AB	The <b>batteries</b> have an <b>electrolyte</b> , contg. a <b>nonaq.electrolyte soln.</b> retained in a <b>polymer</b> , between an anode and a cathode, each having a metal collector filled with an active mass mixt. contg. a <b>polymer</b> and a <b>nonaq. electrolyte soln.</b> retained in the <b>polymer</b> , where the cathode collector and/or anode collector are foamed plate or sintered fiber plates of a metal, which does not form alloy with Li. The anode collector is preferably foamed Ni plate or sintered Ni- or stainless steel-fiber plate; the cathode collector is foamed Al plate or sintered Al-, Ti-, or stainless steel-fiber plate; the polymer is a <b>copolymer</b> contg. at least a fluoro olefin; and the electrolyte soln. is a Li salt soln.				
ST	<b>polymer electrolyte secondary lithium battery</b> ; nickel collector <b>polymer electrolyte lithium battery</b> ; aluminum collector <b>polymer electrolyte lithium battery</b> ; stainless steel collector <b>lithium battery</b> ; titanium collector <b>polymer electrolyte lithium battery</b> ; fluoropolymer <b>polymer electrolyte secondary lithium battery</b>				
IT	Carbonaceous materials (technological products) RL: DEV (Device component use); USES (Uses) (anodes with lithium non-alloying metal collectors for secondary <b>polymer electrolyte batteries</b> )				
IT	<b>Battery electrodes</b> (lithium non-alloying metal collectors for electrode in secondary <b>polymer electrolyte batteries</b> )				
IT	Secondary <b>batteries</b> (lithium; secondary lithium <b>batteries</b> with <b>polymer electrolytes</b> and lithium non-alloying metal collectors for electrodes)				
IT	<b>Battery electrolytes</b> ( <b>polymer electrolytes</b> for secondary lithium <b>batteries</b> with lithium non-alloying metal electrode collectors)				
IT	Metallic fibers RL: DEV (Device component use); USES (Uses) (stainless steel; lithium non-alloying metal collectors for electrode in secondary <b>polymer electrolyte batteries</b> )				
IT	Metallic fibers RL: DEV (Device component use); USES (Uses)				

(titanium; lithium non-alloying metal collectors for electrode in secondary **polymer electrolyte batteries**)

IT 222611-12-3, Iron lithium manganese zinc oxide (Fe0.25Li0.95Mn1.7Zn0.05O4)  
 RL: DEV (Device component use); USES (Uses)  
 (cathodes with lithium non-alloying metal collectors for secondary **polymer electrolyte batteries**)

IT 7429-90-5, Aluminum, uses 7440-02-0, Nickel, uses 7440-32-6, Titanium, uses 7440-50-8, Copper, uses 11134-23-9, SUS 316L  
 RL: DEV (Device component use); USES (Uses)  
 (lithium non-alloying metal collectors for electrode in secondary **polymer electrolyte batteries**)

IT 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 21324-40-3, Lithium hexafluorophosphate 57216-48-5  
 RL: DEV (Device component use); USES (Uses)  
 (**polymer electrolytes** for secondary lithium **batteries** with lithium non-alloying metal electrode collectors)

IT 68841-86-1P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)  
 (**polymer electrolytes** for secondary lithium **batteries** with lithium non-alloying metal electrode collectors)

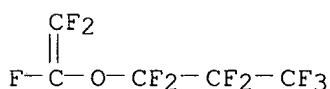
IT 68841-86-1P  
 RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses)  
 (**polymer electrolytes** for secondary lithium **batteries** with lithium non-alloying metal electrode collectors)

RN 68841-86-1 HCAPLUS

CN Propane, 1,1,1,2,2,3,3-heptafluoro-3-[(trifluoroethenyl)oxy]-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

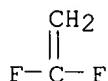
CM 1

CRN 1623-05-8  
 CMF C5 F10 O



CM 2

CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 34 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1999:231853 HCAPLUS  
 DN 130:299396  
 TI **Crosslinked** fluoropolymer electrolyte having high ionic

conductivity and good electrochemical and thermal stability, and lithium **battery** using same electrolyte

IN Kamiya, Hiroki; Kaida, Yuriko; Tamura, Masayuki; Suhara, Manabu; Ikeda, Katsuji; Hiratsuka, Kazuya

PA Asahi Glass Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 8 pp.  
CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01B001-12  
ICS C08L027-12; H01G009-038; H01G009-035; H01G009-028; H01M006-18;  
H01M006-22; H01M010-36; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11096832	A2	19990409	JP 1997-255600	19970919
AB	The fluoropolymer electrolyte comprises a <b>nonaq.</b> solvent dissolving an electrolyte solute, and as a matrix, a <b>crosslinked copolymer</b> having a fluoroolefin unit and a polymerizable unit having a <b>crosslinkable</b> group. Preferably, the fluoroolefin is selected from chlorotrifluoroethylene, tetrafluoroethylene, vinylidene fluoride, and hexafluoropropylene. A Li <b>battery</b> using the claimed polymer electrolyte is also claimed. Thus, a <b>crosslinked</b> t-Bu allylperoxy carbonate-chlorotrifluoroethylene-vinylene carbonate <b>copolymer</b> film was impregnated with a solvent contg. 1:1 mixt. of ethylene carbonate and propylene carbonate and dissolving 1M LiPF <sub>6</sub> . The film had elec. cond. 4 .times. 10 <sup>-4</sup> S/cm.				
ST	<b>crosslinked</b> fluoropolymer electrolyte; lithium <b>battery</b> electrolyte <b>crosslinked</b> fluoropolymer				
IT	Fluoropolymers, uses RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) ( <b>crosslinked, battery</b> electrolyte; polymer electrolyte contg. solute-dissolving <b>nonaq.</b> solvent and <b>crosslinked</b> fluoropolymer matrix for lithium <b>battery</b> electrolytes)				
IT	<b>Battery</b> electrolytes Polymer electrolytes (polymer electrolyte contg. solute-dissolving <b>nonaq.</b> solvent and <b>crosslinked</b> fluoropolymer matrix for lithium <b>battery</b> electrolytes)				
IT	7439-93-2DP, Lithium, complex with <b>crosslinked</b> fluoropolymer, uses RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) ( <b>battery</b> electrolyte; polymer electrolyte contg. solute-dissolving <b>nonaq.</b> solvent and <b>crosslinked</b> fluoropolymer matrix for lithium <b>battery</b> electrolytes)				
IT	223141-78-4P 223141-79-5P 223141-80-8P 223141-81-9P 223141-82-0P RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) (polymer <b>electrolyte</b> contg. solute-dissolving <b>nonaq.</b> solvent and <b>crosslinked</b> fluoropolymer matrix for lithium <b>battery</b> electrolytes)				
IT	223141-80-8P 223141-81-9P RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)				

(polymer **electrolyte** contg. solute-dissolving **nonaq**  
 . solvent and **crosslinked** fluoropolymer matrix for lithium  
**battery electrolytes**)

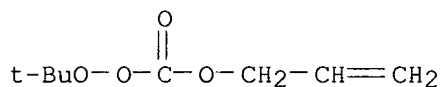
RN 223141-80-8 HCAPLUS

CN Carbonoperoxoic acid, OO-(1,1-dimethylethyl) O-2-propenyl ester, polymer  
 with 1,1-difluoroethene and 1,3-dioxol-2-one (9CI) (CA INDEX NAME)

CM 1

CRN 65700-08-5

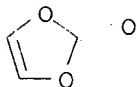
CMF C8 H14 O4



CM 2

CRN 872-36-6

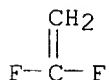
CMF C3 H2 O3



CM 3

CRN 75-38-7

CMF C2 H2 F2



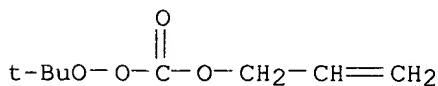
RN 223141-81-9 HCAPLUS

CN Carbonoperoxoic acid, OO-(1,1-dimethylethyl) O-2-propenyl ester, polymer  
 with 1,1-difluoroethene and 1,1,1,2,2,3,3-heptafluoro-3-  
 [(trifluoroethenyl)oxy]propane (9CI) (CA INDEX NAME)

CM 1

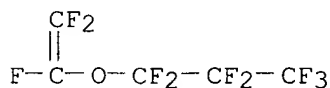
CRN 65700-08-5

CMF C8 H14 O4



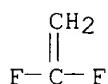
CM 2

CRN 1623-05-8  
CMF C5 F10 O



CM 3

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 35 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:212909 HCAPLUS

DN 130:225393

TI Polymer electrolyte **batteries**

IN Kahata, Toshiyuki; Taniuchi, Masahiro

PA Ricoh Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M004-02; H01M004-62

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11086911	A2	19990330	JP 1997-268118	19970912
AB	The <b>batteries</b> have cathodes and/or anodes impregnated with a polymer electrolyte, contg. an electrolyte salt and a <b>crosslinked</b> polymer matrix, and a solid polymer electrolyte membrane, contg. a thermoplastic and a <b>nonaq.</b> electrolyte, between the electrodes. The electrode may be impregnated with a soln. contg. the electrolyte salt and a polymerizable monomer, e.g., CH <sub>2</sub> :CHCO <sub>2</sub> (CH <sub>2</sub> CHRO) <sub>n</sub> R <sub>1</sub> (R = H or Me, R <sub>1</sub> = hydrocarbon or heterocyclic group, n = integer) or CH <sub>2</sub> :CR <sub>2</sub> CO <sub>2</sub> R <sub>3</sub> (R <sub>2</sub> = H or Me, R <sub>3</sub> = heterocyclic group), which is then polymd. to form the <b>crosslinked</b> polymer matrix.				
ST	<b>battery</b> electrode <b>crosslinked</b> polymer electrolyte impregnation				
IT	<b>Battery</b> electrodes ( <b>crosslinked</b> polymer electrolyte impregnated electrodes for <b>batteries</b> )				
IT	Coke RL: DEV (Device component use); USES (Uses) ( <b>crosslinked</b> polymer electrolyte impregnated electrodes for <b>batteries</b> )				
IT	96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 7782-42-5, Graphite, uses 12057-17-9, Lithium manganese oxide (LiMn <sub>2</sub> O <sub>4</sub> )				

12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>) 21324-40-3, Lithium  
hexafluorophosphate 90450-84-3 129914-67-6 132843-44-8 211946-22-4  
RL: DEV (Device component use); USES (Uses)

(**crosslinked** polymer electrolyte impregnated electrodes for  
**batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer** 25014-41-9, Polyacrylonitrile  
RL: DEV (Device component use); USES (Uses)  
(thermoplastic polymer **electrolytes** for **batteries**  
with **crosslinked** polymer **electrolyte** impregnated  
electrodes)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
RL: DEV (Device component use); USES (Uses)  
(thermoplastic polymer **electrolytes** for **batteries**  
with **crosslinked** polymer **electrolyte** impregnated  
electrodes)

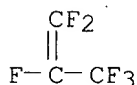
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

CRN 116-15-4

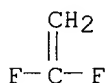
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 36 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:210008 HCAPLUS

DN 130:239969

TI Gel electrolyte for secondary lithium **battery**

IN Aihara, Yuichi; Arai, Morikatsu

PA Yuasa Battery Co., Ltd., Japan

SO Jpn. Kokai Tokyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01B001-12

ICS C08L027-16; C08L071-00; H01M010-40

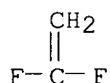
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

FAN.CNT 1



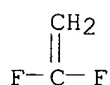
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11086630	A2	19990330	JP 1997-250161	19970916
AB	The electrolyte is obtained by loading polyvinylidene fluoride or its <b>copolymer</b> , which is swollen by an <b>nonaq. electrolytic soln.</b> , on a <b>crosslinked polymer</b> for forming a solid structure. The electrolyte has high ionic cond. and thermal stability.				
ST	gel electrolyte lithium <b>battery</b> ; polyvinylidene fluoride polyacrylate gel electrolyte <b>battery</b>				
IT	<b>Battery</b> electrolytes (polyvinylidene fluoride or its <b>copolymer</b> supported on polyacrylate as gel electrolyte for Li <b>battery</b> )				
IT	Fluoropolymers, uses RL: TEM (Technical or engineered material use); USES (Uses) (polyvinylidene fluoride or its <b>copolymer</b> supported on polyacrylate as gel electrolyte for Li <b>battery</b> )				
IT	79-10-7D, Acrylic acid, esters, polymers <b>24937-79-9</b> , Polyvinylidene fluoride RL: TEM (Technical or engineered material use); USES (Uses) (polyvinylidene fluoride or its <b>copolymer</b> supported on polyacrylate as gel <b>electrolyte</b> for Li <b>battery</b> )				
IT	96-48-0, .gamma.-Butyrolactone 14283-07-9, Lithium tetrafluoroborate RL: TEM (Technical or engineered material use); USES (Uses) (polyvinylidene fluoride swollen with <b>nonaq. electrolyte</b> and supported on polyacrylate as gel electrolyte)				
IT	<b>24937-79-9</b> , Polyvinylidene fluoride RL: TEM (Technical or engineered material use); USES (Uses) (polyvinylidene fluoride or its <b>copolymer</b> supported on polyacrylate as gel <b>electrolyte</b> for Li <b>battery</b> )				
RN	24937-79-9 HCAPLUS				
CN	Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)				
CM	1				
CRN	75-38-7				
CMF	C2 H2 F2				



L93 ANSWER 37 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1999:209072 HCAPLUS  
 DN 130:225367  
 TI **Nonaqueous electrolyte batteries**  
 IN Toriyama, Junichi; Hashizume, Shozo; Yagasaki, Eriko  
 PA Japan Storage Battery Co., Ltd., Japan; Kansai Electric Power Co.  
 SO Jpn. Kokai Tokkyo Koho, 7 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M006-18  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

PI JP 11086910 A2 19990330 JP 1997-257556 19970905  
 AB The **batteries** use a porous **polymer electrolyte**  
 swollen or wet by a **nonaq. electrolyte soln**  
 ., where the pores in the **polymer electrolyte** are  
 closed at a temp. 100-190.degree.. The polymer is selected from polymers  
 or **copolymers** of vinylidene fluoride, vinyl chloride, and  
 acrylonitrile.  
 ST **battery porous polymer electrolyte;**  
**vinylidene fluoride polymer battery**  
**electrolyte; vinyl chloride polymer battery**  
**electrolyte; acrylonitrile polymer battery**  
**electrolyte**  
 IT **Battery electrolytes**  
 (porous **polymer electrolytes** with controlled pore  
 closing temp. for secondary lithium **batteries**)  
 IT Fluoropolymers, uses  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (porous **polymer electrolytes** with controlled pore  
 closing temp. for secondary lithium **batteries**)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 21324-40-3,  
 Lithium hexafluorophosphate 24937-79-9, Poly(vinylidene  
 fluoride)  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (porous **polymer electrolytes** with controlled pore  
 closing temp. for secondary lithium **batteries**)  
 IT 24937-79-9, Poly(vinylidene fluoride)  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (porous **polymer electrolytes** with controlled pore  
 closing temp. for secondary lithium **batteries**)  
 RN 24937-79-9 HCAPLUS  
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 38 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1999:163116 HCAPLUS  
 DN 130:239953  
 TI Macromolecular matrix for formation of solid electrolyte gels, solid  
 electrolytes, and **batteries**  
 IN Katsurao, Isao; Horie, Katsuo; Nagai, Aisaku  
 PA Kureha Chemical Industry Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 11 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01B001-12  
 ICS C08F214-22; H01M010-40; C08F214-24  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 35, 38, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11066949	A2	19990309	JP 1997-235470	19970818
AB	The matrix is a <b>copolymer</b> contg. 50-97 mol% vinylidene fluoride and .gtoreq.0.1 mol% monochlorotrifluoroethylene as its monomers. Solid electrolyte gel obtained by impregnation of the matrix with <b>nonaq</b> . electrolyte is also claimed. The electrolyte may be unified with electrode active mass powder by using the polymer as the binder. <b>Nonaq. batteries</b> contg. the gel electrolyte in-between the electrodes are also claimed. The electrolytes have heat resistance and high ionic cond.				
ST	vinylidene fluoride polymer solid electrolyte gel; ethylene fluoride polymer solid electrolyte gel; <b>battery</b> solid electrolyte fluoropolymer				
IT	Carbon black, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (cathode active material; vinylidene fluoride-monochlorotrifluoroethylene <b>copolymer</b> electrolytes gels as binders for <b>nonaq. batteries</b> electrodes)				
IT	Fluoropolymers, uses RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) ( <b>crosslinked</b> ; vinylidene fluoride-monochlorotrifluoroethylene <b>copolymer</b> gels as electrolytes for <b>nonaq. batteries</b> )				
IT	<b>Battery</b> electrodes ( <b>nonaq.</b> ; vinylidene fluoride-monochlorotrifluoroethylene <b>copolymer</b> gels as electrolytes for <b>nonaq. batteries</b> )				
IT	Binders (vinylidene fluoride-monochlorotrifluoroethylene <b>copolymer</b> electrolytes gels as binders for <b>nonaq. batteries</b> electrodes)				
IT	<b>Battery</b> electrolytes Gels Heat-resistant materials Ionic conductors Polymer electrolytes (vinylidene fluoride-monochlorotrifluoroethylene <b>copolymer</b> gels as electrolytes for <b>nonaq. batteries</b> )				
IT	7440-44-0, Carbotron P, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (anode active material; vinylidene fluoride-monochlorotrifluoroethylene <b>copolymer</b> electrolytes gels as binders for <b>nonaq. batteries</b> electrodes)				
IT	12190-79-3, Cobalt lithium oxide (CoLiO <sub>2</sub> ) RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (cathode active material; vinylidene fluoride-monochlorotrifluoroethylene <b>copolymer</b> electrolytes gels as binders for <b>nonaq. batteries</b> electrodes)				
IT	164914-12-9P 221332-93-0P RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses) ( <b>crosslinked</b> ; vinylidene fluoride-monochlorotrifluoroethylene <b>copolymer</b> gels as electrolytes for <b>nonaq. batteries</b> )				

IT 164914-12-9P 221332-93-0P

RL: DEV (Device component use); IMF (Industrial manufacture); TEM  
(Technical or engineered material use); PREP (Preparation); USES (Uses)  
(crosslinked; vinylidene fluoride-monochlorotrifluoroethylene  
copolymer gels as electrolytes for nonaq.  
batteries)

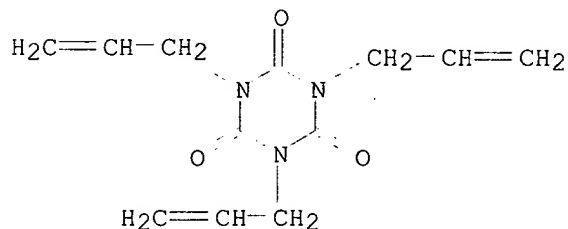
RN 164914-12-9 HCAPLUS

CN 1,3,5-Triazine-2,4,6(1H,3H,5H)-trione, 1,3,5-tri-2-propenyl-, polymer with  
chlorotrifluoroethene and 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 1025-15-6

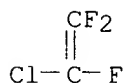
CMF C12 H15 N3 O3



CM 2

CRN 79-38-9

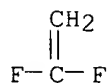
CMF C2 Cl F3



CM 3

CRN 75-38-7

CMF C2 H2 F2



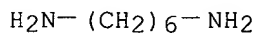
RN 221332-93-0 HCAPLUS

CN 1,6-Hexanediamine, polymer with chlorotrifluoroethene and  
1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

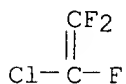
CRN 124-09-4

CMF C6 H16 N2



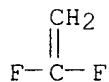
CM 2

CRN 79-38-9  
CMF C2 C1 F3



CM 3

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 39 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1999:139573 HCAPLUS

DN 130:156086

TI Manufacture of secondary **polymer electrolyte batteries**

IN Kimishima, Takahiro

PA Toshiba Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

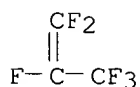
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11054152	A2	19990226	JP 1997-211991	19970806
AB	The <b>batteries</b> are manuf. by prepg. plasticizer-contg. electrolyte-free precursor sheets for cathodes, anodes, and separators; removing the plasticizer from the sheets by extn. with a solvent; and immersing the sheets in a <b>nonaq. electrolyte soln.</b> ; where the extn. solvent contains hydrocarbon solvents. Preferably the hydrocarbon solvents are C5-12 satd. hydrocarbons.				
ST	<b>polymer electrolyte battery</b> manuf solvent extn; plasticizer removal solvent extn <b>polymer battery</b>				
IT	Extraction (hydrocarbon solvents for removing plasticizers from electrodes and separators in <b>polymer electrolyte battery</b> manuf.)				
IT	Carbon fibers, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)				

- (hydrocarbon solvents for removing plasticizers from electrodes and separators in **polymer electrolyte battery** manuf.)
- IT 7631-86-9, Silica, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 12057-17-9, Lithium manganese oxide (LiMn2O4)  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(hydrocarbon solvents for removing plasticizers from electrodes and separators in **polymer electrolyte battery** manuf.)
- IT 84-74-2, Dbp  
RL: MSC (Miscellaneous)  
(hydrocarbon solvents for removing plasticizers from electrodes and separators in **polymer electrolyte battery** manuf.)
- IT 107-83-5, 2-Methylpentane 109-66-0, n-Pentane, uses 110-54-3, n-Hexane, uses 112-40-3, n-Dodecane 124-18-5, n-Decane  
RL: NUU (Other use, unclassified); USES (Uses)  
(hydrocarbon solvents for removing plasticizers from electrodes and separators in **polymer electrolyte battery** manuf.)
- IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer**  
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
(hydrocarbon solvents for removing plasticizers from electrodes and separators in **polymer electrolyte battery** manuf.)
- RN 9011-17-0 HCAPLUS
- CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

CRN 116-15-4

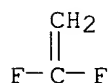
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 40 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 1998:744932 HCAPLUS  
DN 129:345413

KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

TI Fibrous sheet for forming **polymer** gelled **electrolyte**  
having excellent ion conductivity and suitable for various electronic  
devices

IN Yamada, Teruyuki; Hayashi, Seiji; Hosako, Yoshihiko; Hamada, Mitsuo

PA Mitsubishi Rayon Co., Ltd., Japan

SO Eur. Pat. Appl., 19 pp.

CODEN: EPXXDW

DT Patent

LA English

IC ICM H01M010-40

ICS H01M002-16; H01M006-22

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 37, 38, 72, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 877432	A2	19981111	EP 1998-108248	19980506
	EP 877432	A3	20000830		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 10308238	A2	19981117	JP 1997-115770	19970506
	JP 11102612	A2	19990413	JP 1997-264271	19970929
	CA 2236779	AA	19981106	CA 1998-2236779	19980505
	TW 394804	B	20000621	TW 1998-87106898	19980505
	CN 1204132	A	19990106	CN 1998-115262	19980506
	US 6114068	A	20000905	US 1998-72982	19980506
PRAI	JP 1997-115770	A	19970506		
	JP 1997-264271	A	19970929		

AB The fibrous sheet suitable for Li primary and secondary **batteries**  
, and elec. double layer capacitors is made of a matrix phase of fibrous  
or pulplike org. polymeric material sol. or plasticizable in a  
**nonaq. electrolytic soln.** and preferably a 2nd  
supporting phase of org. or inorg. fibrous or pulplike material, insol. or  
nonplasticizable in that soln.

ST **polymer** gelled **electrolyte** fibrous sheet forming;  
electronic device **polymer** gelled **electrolyte** forming;  
capacitor **polymer** gelled **electrolyte** fibrous sheet;  
**battery** lithium **polymer** gelled **electrolyte**  
forming

IT Capacitors

(fibrous sheet for forming **polymer** gelled **electrolyte**  
having excellent ion cond. and suitable for)

IT Fluoropolymers, processes

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(in forming fibrous sheet for forming **polymer** gelled  
**electrolyte** for electronic devices)

IT Primary **batteries**

Secondary **batteries**

(lithium; fibrous sheet for forming **polymer** gelled  
**electrolyte** having excellent ion cond. and suitable for)

IT Ionic conductivity

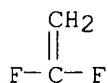
(of **polymer** gel **electrolyte**)

IT 127-19-5, N,N-Dimethylacetamide 24937-79-9, PVDF 25839-81-0,  
Radel R 5000 104983-64-4, Matrimid 5218

RL: PEP (Physical, engineering or chemical process); PROC (Process)  
(in forming fibrous sheet for forming **polymer** gelled  
**electrolyte** for electronic devices)

IT 24980-62-9P, Acrylonitrile-vinyl acetate **copolymer**  
25014-41-9P, Polyacrylonitrile 25053-12-7P, Acrylonitrile-ethyl acrylate  
**copolymer** 25567-76-4P, Acrylonitrile-butyl acrylate

copolymer 27027-40-3P, Acrylonitrile-butyl methacrylate  
 copolymer 215584-59-1P  
 RL: PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)  
 (in forming fibrous sheet for forming **polymer** gelled **electrolyte** for electronic devices)  
 IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 623-53-0, Ethylmethyl carbonate  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (in **polymer** gelled **electrolyte** for electronic devices)  
 IT 24937-79-9, PVDF  
 RL: PEP (Physical, engineering or chemical process); PROC (Process)  
 (in forming fibrous sheet for forming **polymer** gelled **electrolyte** for electronic devices)  
 RN 24937-79-9 HCAPLUS  
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1  
 CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 41 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1998:728686 HCAPLUS  
 DN 129:333331  
 TI Vinylidene fluoride polymer-based binder solution and **battery**  
 electrode-forming composition  
 IN Horie, Katsuo; Katsurao, Takumi; Nagai, Aisaku  
 PA Kureha Kagaku Kogyo K. K., Japan  
 SO PCT Int. Appl., 40 pp.  
 CODEN: PIXXD2  
 DT Patent  
 LA English  
 IC ICM H01M004-62  
 ICS C08F214-22  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 38, 72

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9849737	A1	19981105	WO 1998-JP1930	19980427
	W: CA, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	JP 10302800	A2	19981113	JP 1997-122862	19970428
	EP 1016151	A1	20000705	EP 1998-917700	19980427
	EP 1016151	B1	20020130		
	R: DE, FR, GB, NL				
PRAI	JP 1997-122862	A	19970428		
	WO 1998-JP1930	W	19980427		
AB	A binder soln. for providing an electrode suitable for use in a nonaq. electrolytic soln. is formed by dissolving a vinylidene fluoride <b>polymer</b>				



having an **abnormal linkage** content of <4 %, which is lower than a conventional level, in an org. solvent. An electrode-forming compn. is formed by dispensing a powdery electrode material in the binder soln., applying the soln. on an electroconductive substrate, and drying. composite electrode layer, which is well resistant to a nonaq. electrolytic soln., thereby providing a secondary **battery** or an elec. double layer capacitor with an improved charge-discharge cycle performance. The formed composite electrode layer is well resistant to a nonaq. electrolytic soln. and provides a secondary **battery** or an elec. double layer capacitor with an improved charge-discharge cycle performance.

ST polyvinylidene fluoride binder soln **battery** electrode

IT Fluoropolymers, uses

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(binder soln. for forming **battery** electrodes from **abnormal linkage** content)

IT Carbonaceous materials (technological products)

RL: PEP (Physical, engineering or chemical process); PROC (Process) (forming of **battery** anodes with binder soln. of PVDF with **abnormal linkage** content and)

IT **Battery** anodes

**Battery** cathodes

(forming with binder soln. of PVDF with **abnormal linkage** content)

IT 872-50-4, N-Methyl-2-pyrrolidone, uses

RL: NUU (Other use, unclassified); USES (Uses)

(PVDF binder soln. for forming **battery** electrodes)

IT 24937-79-9P, Poly(vinylidene fluoride)

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(binder soln. for forming **battery** electrodes from **abnormal linkage** content)

IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)

RL: PEP (Physical, engineering or chemical process); PROC (Process) (forming of **battery** cathodes with binder soln. of PVDF with **abnormal linkage** content and)

IT 24937-79-9P, Poly(vinylidene fluoride)

RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)

(binder soln. for forming **battery** electrodes from **abnormal linkage** content).

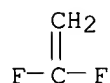
RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 42 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:512218 HCAPLUS

DN 129:233078

KATHLEEN FULLER EIC 1700/LAW LIBRARY 308-4290

TI Sheet materials for gelled **polymer electrolytes** and the **electrolytes**  
 IN Yamada, Teruyuki; Hayashi, Shoji  
 PA Mitsubishi Rayon Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM D21H013-18  
 ICS D04H001-42; H01B001-12; H01M006-18; H01M006-22; H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 Section cross-reference(s): 43

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10212687	A2	19980811	JP 1997-12363	19970127
AB	The sheet materials are .gtoreq.5 .mu.m thick fiber sheets of fibrous <b>polymers</b> sol. or swellable in <b>nonaq. electrolyte</b> solns. The fibrous polymer is preferably an acrylonitrile based <b>copolymer</b> . The gelled <b>polymer electrolytes</b> have a <b>nonaq. electrolyte soln.</b> impregnated and gelled in the fiber sheet. The electrolytes are suitable for <b>batteries</b> and double layer capacitors.				
ST	<b>battery</b> gelled <b>polymer electrolyte</b> fiber sheet; capacitor gelled <b>polymer electrolyte</b> fiber sheet; acrylonitrile <b>copolymer</b> fiber sheet <b>battery</b> electrolyte				
IT	Capacitors (double layer; gelled <b>polymer electrolytes</b> contg. acrylonitrile <b>copolymer</b> fiber substrate sheets for <b>batteries</b> and capacitors)				
IT	<b>Battery electrolytes</b> (gelled <b>polymer electrolytes</b> contg. acrylonitrile <b>copolymer</b> fiber substrate sheets for <b>batteries</b> and capacitors)				
IT	Fluoropolymers, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (gelled <b>polymer electrolytes</b> contg. acrylonitrile <b>copolymer</b> fiber substrate sheets for <b>batteries</b> and capacitors)				
IT	24980-62-9P, Acrylonitrile-vinyl acetate <b>copolymer</b> RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PREP (Preparation); PROC (Process); USES (Uses) (gelled <b>polymer electrolytes</b> contg. acrylonitrile <b>copolymer</b> fiber substrate sheets for <b>batteries</b> and capacitors)				
IT	108-32-7, Propylene carbonate 9011-14-7, Pmma 21324-40-3, Lithium hexafluorophosphate <b>24937-79-9</b> , Poly(vinylidene fluoride) 25839-81-0, Radel r 5000 104983-64-4, Matrimid 5218 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (gelled <b>polymer electrolytes</b> contg. acrylonitrile <b>copolymer</b> fiber substrate sheets for <b>batteries</b> and capacitors)				
IT	<b>24937-79-9</b> , Poly(vinylidene fluoride) RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (gelled <b>polymer electrolytes</b> contg. acrylonitrile				

**copolymer** fiber substrate sheets for **batteries** and capacitors)

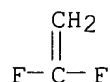
RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 43 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:505051 HCAPLUS

DN 129:151145

TI Secondary **polymer electrolyte batteries** with reinforced **electrolyte** layers

IN Kurisu, Shunji

PA Toshiba Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

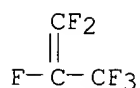
IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

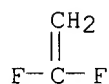
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10208774	A2	19980807	JP 1997-9502	19970122
AB	The <b>batteries</b> have a solid <b>polymer electrolyte</b> layer contg. a <b>nonaq. electrolyte soln.</b> , an <b>electrolyte</b> retaining <b>polymer</b> , and org. reinforcing particles between the <b>battery</b> cathode and anode. Preferably, the reinforcing particles have m.p. 100-160.degree..				
ST	secondary <b>battery polymer electrolyte</b> reinforcement; <b>battery polymer electrolyte</b> org particle reinforcement				
IT	<b>Battery electrolytes</b> ( <b>polymer electrolyte</b> membranes contg. org. reinforcing particles for secondary lithium <b>batteries</b> )				
IT	96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> 21324-40-3, Lithium hexafluorophosphate RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) ( <b>polymer electrolyte</b> membranes contg. org. reinforcing particles for secondary lithium <b>batteries</b> )				
IT	9002-88-4, Polyethylene RL: MOA (Modifier or additive use); USES (Uses) ( <b>polymer electrolyte</b> membranes contg. polyethylene reinforcing particles for secondary lithium <b>batteries</b> )				
IT	9003-07-0, Polypropylene RL: MOA (Modifier or additive use); USES (Uses) ( <b>polymer electrolyte</b> membranes contg. polypropylene reinforcing particles for secondary lithium <b>batteries</b> )				

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (polymer electrolyte membranes contg. org.  
 reinforcing particles for secondary lithium **batteries**)  
 RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)  
 CM 1  
 CRN 116-15-4  
 CMF C3 F6



CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2

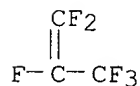


L93 ANSWER 44 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1998:505050 HCAPLUS  
 DN 129:151144  
 TI Manufacture of secondary **polymer electrolyte**  
**batteries**  
 IN Kurisu, Shunji; Tsuchiya, Kenji; Shimazu, Kenji  
 PA Toshiba Battery Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF  
 DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1  

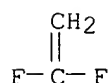
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10208773	A2	19980807	JP 1997-9501	19970122

AB The **batteries** are prepd. by placing a solid **polymer**  
**electrolyte** layer contg. a **nonaq. electrolyte**  
**soln.** between a cathode and an anode, cutting parallel slits  
 spread along the length of the stack on opposite sides of the stack with  
 slits on opposite sides facing each other, and folding the stack in a  
 zigzag form at the slits.  
 ST secondary **polymer electrolyte battery** manuf  
 IT Secondary **batteries**  
 (lithium; manuf. of secondary **polymer electrolyte**)

lithium **batteries**)  
 IT Carbon fibers, uses  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (manuf. of secondary **polymer electrolyte** lithium **batteries** contg. carbon fiber anodes)  
 IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 21324-40-3, Lithium hexafluorophosphate  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (manuf. of secondary **polymer electrolyte** lithium **batteries**)  
 IT 12190-79-3, Cobalt lithium oxide (CoLiO<sub>2</sub>)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (manuf. of secondary **polymer electrolyte** lithium **batteries** contg. lithium cobaltate cathodes)  
 IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (manuf. of secondary **polymer electrolyte** lithium **batteries**)  
 RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)  
 CM 1  
 CRN 116-15-4  
 CMF C3 F6



CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 45 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1998:496180 HCAPLUS  
 DN 129:138541  
 TI Electrode and separator sheets for **polymer electrolyte batteries** and manufacture of the **batteries**  
 IN Kimishima, Takahiro  
 PA Toshiba Battery Co., Ltd., Japan  
 SO Jpn. Kokai Tokkyo Koho, 19 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS H01M010-40; H01M002-16; H01M004-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10199572	A2	19980731	JP 1997-6645	19970117
AB	<p>The electrodes contain an active mass, a <b>polymer</b> contg. a <b>nonaq. electrolyte</b>, a 1st plasticizer having a retention rate RR .ltoreq.80% after stored at 60.degree. for 10 days, and a 2nd plasticizer having RR .gtoreq.80%. The separator sheets contain a <b>polymer</b> contg. a <b>nonaq. electrolyte</b>, the 1st plasticizer, and the 2nd plasticizer. The <b>batteries</b> are prepd. by stacking electrode precursors contg. the active mass, the <b>polymer</b> without the <b>electrolyte</b>, and the plasticizers with separator precursors contg. the <b>polymer</b> without the <b>electrolyte</b> and the plasticizers; hot pressing the stack; removing the plasticizers; and impregnating the stack with a <b>nonaq. electrolyte soln.</b></p>				
ST	plasticizer <b>nonaq battery</b> electrode separator manuf				
IT	<p>Secondary <b>batteries</b>          (lithium; plasticizer mixts. for manuf. of <b>electrolytes</b> and separators contg. <b>electrolyte</b> retaining <b>polymers</b> for secondary lithium <b>batteries</b>)</p>				
IT	<p><b>Battery</b> electrodes  <b>Battery</b> electrolytes          (plasticizer mixts. for manuf. of <b>electrolytes</b> and separators contg. <b>electrolyte</b> retaining <b>polymers</b> for secondary lithium <b>batteries</b>)</p>				
IT	<p>Carbon fibers, uses          RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)          (plasticizer mixts. for manuf. of <b>electrolytes</b> and separators contg. <b>electrolyte</b> retaining <b>polymers</b> for secondary lithium <b>batteries</b>)</p>				
IT	<p>Plastics, uses          RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)          (plasticizer mixts. for manuf. of <b>electrolytes</b> and separators contg. <b>electrolyte</b> retaining <b>polymers</b> for secondary lithium <b>batteries</b>)</p>				
IT	<p>7631-86-9, Silica, uses 9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> 12057-17-9, Lithium manganese oxide (LiMn2O4)          RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)          (plasticizer mixts. for manuf. of <b>electrolytes</b> and separators contg. <b>electrolyte</b> retaining <b>polymers</b> for secondary lithium <b>batteries</b>)</p>				
IT	<p>84-74-2, Dbp 103-23-1, Doa          RL: NUU (Other use, unclassified); USES (Uses)          (plasticizer mixts. for manuf. of <b>electrolytes</b> and separators contg. <b>electrolyte</b> retaining <b>polymers</b> for secondary lithium <b>batteries</b>)</p>				
IT	<p>9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b>          RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)</p>				

(plasticizer mixts. for manuf. of **electrolytes** and separators  
contg. **electrolyte** retaining **polymers** for secondary  
lithium **batteries**)

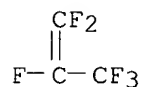
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

CM 1

CRN 116-15-4

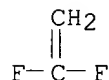
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 46 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1998:341441 HCAPLUS

DN 129:6562

TI **Polymer electrolyte** membranes for secondary  
**batteries** and manufacture of the **batteries**

IN Katsumata, Tomoo; Tsuchiya, Kenji; Shimazu, Kenji; Kano, Koji

PA Toshiba Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 7 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

ICS C08L027-12; H01B001-12

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 10144350	A2	19980529	JP 1996-298718	19961111
AB	The electrolyte membranes contain a <b>copolymer</b> of vinylidene fluoride and C3F6 and have gas permeability 30-100 (JIS P8117). The <b>batteries</b> are prepd. by immersing the <b>copolymer</b> contg. membrane in a <b>nonaq. electrolyte soln.</b> , holding the <b>electrolyte</b> impregnated membrane between a cathode and an anode, each comprising an active mass and the <b>copolymer</b> , and impregnating the assembly with the <b>nonaq. electrolyte soln.</b>				
ST	<b>battery</b> vinylidene fluoride hexafluoropropylene <b>copolymer</b> membrane; vinylidene fluoride hexafluoropropylene <b>copolymer</b> electrolyte membrane				

IT **Battery** electrolytes  
 (hexafluoropropylene-vinylidene fluoride **copolymer**  
 electrolyte membranes with controlled gas permeability for secondary  
 lithium **batteries**)

IT Coke  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (manuf. of solid electrolyte secondary lithium **batteries** with  
 electrolyte contg. electrodes)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 21324-40-3,  
 Lithium hexafluorophosphate  
 RL: DEV (Device component use); USES (Uses)  
 (hexafluoropropylene-vinylidene fluoride **copolymer**  
 electrolyte membranes with controlled gas permeability for secondary  
 lithium **batteries**)

IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (hexafluoropropylene-vinylidene fluoride **copolymer**  
**electrolyte** membranes with controlled gas permeability for  
 secondary lithium **batteries**)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (manuf. of solid electrolyte secondary lithium **batteries** with  
 electrolyte contg. electrodes)

IT **9011-17-0**, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
 RL: DEV (Device component use); PRP (Properties); USES (Uses)  
 (hexafluoropropylene-vinylidene fluoride **copolymer**  
**electrolyte** membranes with controlled gas permeability for  
 secondary lithium **batteries**)

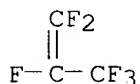
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

CM 1

CRN 116-15-4

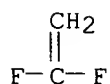
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2





L93 ANSWER 47 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:768987 HCAPLUS

DN 128:63927

TI Manufacture of solid **polymer electrolyte batteries**, the **batteries**, and **nonaqueous electrolyte solutions** for the **batteries**

IN Inada, Minoru; Hachiki, Noriaki; Saito, Nobuhiro; Santo, Shigeo

PA Toshiba Corp., Japan; Toshiba Silicone Co., Ltd.

SO Jpn. Kokai Tokkyo Koho, 12 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

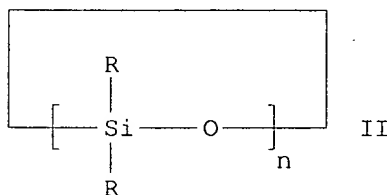
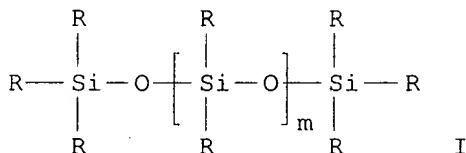
IC ICM H01M010-40

ICS H01M010-40; C08L101-00; H01M006-18; C08G077-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

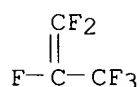
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09306544	A2	19971128	JP 1996-124811	19960520
GI					



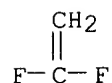
AB The **electrolytes**, having a **nonaq. electrolyte soln.** retained in a **polymer** layer and held between a cathode and an anode in a **battery**, are prepd. by holding a mixt. of the polymer and a plasticizer into sheets, extg. the plasticizer from the sheets by using a low mol. wt. linear or cyclic siloxane [I, II, R = (substituted) monovalent org. group, m = 0-7, n = 3-10], and impregnating the plasticizer removed sheets with a **nonaq. electrolyte soln.** The **batteries** use a **polymer electrolyte** layer having a **polymer** retaining a **nonaq. electrolyte soln.**, which contains I and/or II and components for increasing ion cond. of the soln. The polymer is preferably poly(vinylidene fluoride) or vinylidene fluoride-C3F6 copolymer. The **nonaq. electrolyte solns.** contain an **electrolyte**, the above siloxane, and a hydrocarbon solvent having a solvation coeff. (SP value) 4-13.

ST **battery polymer nonaq soln electrolyte; siloxane battery polymer**

IT electrolyte manuf  
 IT Battery electrolytes  
 (compns. and structure and manuf. of polymer  
 electrolytes for secondary lithium batteries)  
 IT Fluoropolymers, uses  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (compns. and structure and manuf. of polymer  
 electrolytes for secondary lithium batteries)  
 IT 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 107-46-0,  
 Hexamethyl disiloxane 126-33-0, Sulfolane 556-67-2, Octamethyl  
 cyclotetrasiloxane 616-38-6, Dimethyl carbonate 623-53-0, Methyl ethyl  
 carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
 copolymer 21324-40-3, Lithium hexafluorophosphate  
 24937-79-9, Poly(vinylidene fluoride)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (compns. and structure and manuf. of polymer  
 electrolytes for secondary lithium batteries)  
 IT 84-74-2, Dbp  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (compns. and structure and manuf. of polymer  
 electrolytes for secondary lithium batteries)  
 IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
 copolymer 24937-79-9, Poly(vinylidene fluoride)  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical  
 process); PROC (Process); USES (Uses)  
 (compns. and structure and manuf. of polymer  
 electrolytes for secondary lithium batteries)  
 RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)  
 CM 1  
 CRN 116-15-4  
 CMF C3 F6

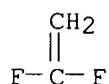


CM 2  
 CRN 75-38-7  
 CMF C2 H2 F2



RN 24937-79-9 HCAPLUS  
 CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)  
 CM 1

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 48 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 1997:562463 HCAPLUS  
DN 127:222977  
TI Secondary **polymer electrolyte batteries**  
IN Tsuchiya, Kenji; Kabuki, Kimiaki; Kano, Koji; Shimazu, Kenji; Kurisu, Shunji  
PA Toshiba Battery Co., Ltd., Japan  
SO Jpn. Kokai Tokkyo Koho, 14 pp.  
CODEN: JKXXAF  
DT Patent  
LA Japanese  
IC ICM H01M010-40  
ICS H01M010-40; H01M004-62  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09213369	A2	19970815	JP 1996-16072	19960131
AB	The <b>batteries</b> use cathodes contg. an active mass and a <b>polymer</b> retaining a <b>nonaq. electrolyte soln.</b> , an anode contg. an active mass and a <b>polymer</b> retaining a <b>nonaq. electrolyte soln.</b> , and solid <b>electrolyte</b> layer contg. a <b>polymer</b> retaining a <b>nonaq. electrolyte soln.</b> between the electrodes; where the <b>electrolyte</b> retaining <b>polymer</b> in the cathode, anode, and/or the electrolyte layer contains a hexafluoropropylene-vinylidene fluoride <b>copolymer</b> and a hetero bonding <b>polymer</b> capable of retaining the <b>electrolyte soln.</b>				
ST	<b>polymer electrolyte battery</b> ; vinylidene fluoride hexafluoropropylene <b>copolymer battery</b> <b>electrolyte</b> ; hetero bonding <b>polymer battery</b> <b>electrolyte</b> ; electrodes <b>polymer electrolyte battery</b>				
IT	<b>Battery electrolytes</b> (comps. of <b>polymer electrolytes</b> contg. hexafluoropropylene-vinylidene fluoride <b>copolymer</b> and poly(glycidyl Me ether) for secondary lithium <b>batteries</b> )				
IT	Carbon fibers, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (comps. of <b>polymer electrolytes</b> for carbon fiber anodes in secondary lithium <b>batteries</b> )				
IT	96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> 21324-40-3, Lithium hexafluorophosphate 28325-89-5 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (comps. of <b>polymer electrolytes</b> contg.				

hexafluoropropylene-vinylidene fluoride **copolymer** and  
poly(glycidyl Me ether) for secondary lithium **batteries**)

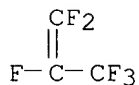
IT 12190-79-3, Cobalt lithium oxide (CoLiO2)  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PROC (Process); USES (Uses)  
(compns. of **polymer electrolytes** for lithium  
cobaltate cathodes in secondary lithium **batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride  
**copolymer**  
RL: DEV (Device component use); PEP (Physical, engineering or chemical  
process); PROC (Process); USES (Uses)  
(compns. of **polymer electrolytes** contg.  
hexafluoropropylene-vinylidene fluoride **copolymer** and  
poly(glycidyl Me ether) for secondary lithium **batteries**)

RN 9011-17-0 HCAPLUS  
CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
(CA INDEX NAME)

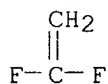
CM 1

CRN 116-15-4  
CMF C3 F6



CM 2

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 49 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
AN 1997:543495 HCAPLUS  
DN 127:138100  
TI Binder **solution** and electrode-forming composition for  
**nonaqueous-electrolyte battery**  
IN Kashio, Hidetora; Horie, Katsuo; Katsurao, Takumi; Shibata, Fumio; Nagai,  
Aisaku  
PA Kureha Kagaku Kogyo Kabushiki Kaisha, Japan  
SO Eur. Pat. Appl., 12 pp.  
CODEN: EPXXDW  
DT Patent  
LA English  
IC ICM H01M004-62  
ICS C08K003-24; C08K005-09  
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 38  
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
------------	------	------	-----------------	------

PI	EP 782208	A1	19970702	EP 1996-309481	19961224
	R: DE, FR, GB				
	JP 09180725	A2	19970711	JP 1995-350782	19951226
	JP 09306502	A2	19971128	JP 1996-146473	19960517
	US 6200703	B1	20010313	US 1996-779955	19961223
	CA 2193935	AA	19970627	CA 1996-2193935	19961224
PRAI	JP 1995-350782	A	19951226		
	JP 1996-146473	A	19960517		

AB A poly(vinylidene fluoride) binder soln. for forming an electrode for the title **battery** is formed by adding an acid, preferably an org. acid, as a stabilizer to a soln. of a poly(vinylidene fluoride) in an org. solvent. The acid is preferably added in an amt. sufficient to ensure a pH of at most 9 when measured with respect to a 10-times diln. of the binder soln. with deionized H2O. The acid addn. is effective for preventing a problematic **viscosity** increase in the binder soln. and also gelling of an electrode-forming compn. formed by adding a powdery electrode material in the binder soln.

ST binder **soln** electrode compn **nonaq electrolyte**  
; **battery** electrode compn binder soln; polyvinylidene fluoride  
binder soln electrode compn

IT **Battery** electrodes  
(binder **soln.** and compn. for forming **nonaq.-electrolyte**)

IT Fluoropolymers, uses  
RL: DEV (Device component use); USES (Uses)  
(binder **soln.** and electrode-forming compn. for **nonaq.-electrolyte battery**)

IT 113066-89-0, Cobalt lithium nickel oxide (Co0.2LiNi0.8O2) 116327-69-6,  
Cobalt lithium nickel oxide (Co0.1LiNi0.9O2)  
RL: TEM (Technical or engineered material use); USES (Uses)  
(binder **soln.** and cathode-forming compn. for **nonaq.-electrolyte battery**)

IT 24937-79-9, Poly(vinylidene fluoride)  
RL: DEV (Device component use); USES (Uses)  
(binder **soln.** and electrode-forming compn. for **nonaq.-electrolyte battery**)

IT 110-16-7, Maleic acid, uses  
RL: MOA (Modifier or additive use); USES (Uses)  
(binder **soln.** and electrode-forming compn. for **nonaq.-electrolyte battery**)

IT 24937-79-9, Poly(vinylidene fluoride)  
RL: DEV (Device component use); USES (Uses)  
(binder **soln.** and electrode-forming compn. for **nonaq.-electrolyte battery**)

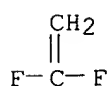
RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 50 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:508386 HCAPLUS

DN 127:193080

TI Secondary **polymer electrolyte batteries**

IN Shimazu, Kenji; Kano, Koji; Kurisu, Shunji

PA Toshiba Battery Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 13 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M004-02

ICS H01M004-02; H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09199113	A2	19970731	JP 1996-9429	19960123
AB	The <b>batteries</b> use a cathode having a layer of an active mass and a <b>nonaq. electrolyte soln.</b> retaining <b>polymer</b> applied on a metal collector, an having a layer of an active mass and a <b>nonaq. electrolyte soln.</b> retaining <b>polymer</b> applied on a collector, and a <b>polymer</b> contg. an <b>nonaq. electrolyte soln.</b> between the electrodes; where the cathode and/or the anode active mass layer contains a carboxy group contg. <b>electrolyte</b> resistant <b>polymer</b> . These <b>batteries</b> have long cycle life.				
ST	<b>battery electrode polymer electrolyte</b>				
IT	Carbon fibers, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (carbon fiber anodes contg. <b>electrolyte</b> retaining <b>polymers</b> and <b>electrolyte</b> resistant carboxylic group contg. <b>polymers</b> for secondary <b>polymer electrolyte batteries</b> )				
IT	Nitrile rubber, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (carboxy-contg.; cathodes contg. <b>electrolyte</b> retaining <b>polymers</b> and <b>electrolyte</b> resistant carboxylic group contg. <b>polymers</b> for secondary <b>polymer electrolyte batteries</b> )				
IT	<b>Battery electrodes</b> (electrodes contg. <b>electrolyte</b> retaining <b>polymers</b> and <b>electrolyte</b> resistant carboxylic group contg. <b>polymers</b> for secondary <b>polymer electrolyte batteries</b> )				
IT	Fluoropolymers, uses RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (electrodes contg. <b>electrolyte</b> retaining <b>polymers</b> and <b>electrolyte</b> resistant carboxylic group contg. <b>polymers</b> for secondary <b>polymer electrolyte batteries</b> )				
IT	12190-79-3, Cobalt lithium oxide (CoLiO2) RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (cathodes contg. <b>electrolyte</b> retaining <b>polymers</b> and <b>electrolyte</b> resistant carboxylic group contg. <b>polymers</b> for secondary <b>polymer electrolyte batteries</b> )				

IT 5945-33-5, Bdp 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 9011-17-0D, Hexafluoropropylene-vinylidene fluoride **copolymer**, carboxylated  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (electrodes contg. **electrolyte** retaining **polymers** and **electrolyte** resistant carboxylic group contg. **polymers** for secondary **polymer electrolyte batteries**)

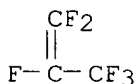
IT 9003-18-3  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (nitrile rubber, carboxy-contg.; cathodes contg. **electrolyte** retaining **polymers** and **electrolyte** resistant carboxylic group contg. **polymers** for secondary **polymer electrolyte batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 9011-17-0D, Hexafluoropropylene-vinylidene fluoride **copolymer**, carboxylated  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (electrodes contg. **electrolyte** retaining **polymers** and **electrolyte** resistant carboxylic group contg. **polymers** for secondary **polymer electrolyte batteries**)

RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

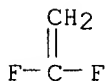
CM 1

CRN 116-15-4  
 CMF C3 F6



CM 2

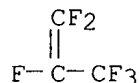
CRN 75-38-7  
 CMF C2 H2 F2



RN 9011-17-0 HCAPLUS  
 CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

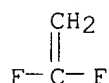
CM 1

CRN 116-15-4  
 CMF C3 F6



CM 2

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 51 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:189854 HCAPLUS

DN 126:188474

TI Manufacture of secondary **polymer electrolyte batteries**

IN Tsucha, Kenji; Yoshida, Kazumasa; Fujinoki, Shiro

PA Toshiba Battery, Japan

SO Jpn. Kokai Tokkyo Koho, 5 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09022724	A2	19970121	JP 1995-171122	19950706
AB	The <b>batteries</b> , having an <b>electrolyte</b> membrane contg. a <b>nonaq. electrolyte soln.</b> retained in a <b>polymer</b> held between a cathode contg. the electrolyte soln. and an anode contg. a Li intercalating carbonaceous material and the electrolyte soln., are prepd. by impregnating a nonwoven synthetic fiber fabric in a soln. of the polymer and a volatile <b>nonaq.</b> solvent, and evapg. the solvent.				
ST	lithium <b>battery polymer electrolyte</b> membrane manuf				
IT	Polyolefin fibers RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (ethylene, nonwoven fabrics; manuf. of fluoropolymer retained <b>nonaq. electrolyte</b> membranes with nonwoven polyethylene fiber substrates for secondary lithium <b>batteries</b> )				
IT	<b>Battery electrolytes</b> (manuf. of fluoropolymer retained <b>nonaq. electrolyte</b> membranes with nonwoven polyethylene fiber substrates for secondary lithium <b>batteries</b> )				
IT	67-64-1, Acetone, uses RL: NUU (Other use, unclassified); USES (Uses) (in manuf. of fluoropolymer retained <b>nonaq.</b>				



**electrolyte** membranes with nonwoven polyethylene fiber substrates for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer** 14283-07-9, Lithium fluoroborate  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (manuf. of fluoropolymer retained **nonaq. electrolyte** membranes with nonwoven polyethylene fiber substrates for secondary lithium **batteries**)

IT 9002-88-4, Polyethylene  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (nonwoven fabrics; manuf. of fluoropolymer retained **nonaq. electrolyte** membranes with nonwoven polyethylene fiber substrates for secondary lithium **batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer**  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (manuf. of fluoropolymer retained **nonaq. electrolyte** membranes with nonwoven polyethylene fiber substrates for secondary lithium **batteries**)

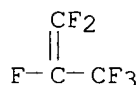
RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-15-4

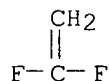
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 52 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:189853 HCAPLUS

DN 126:188473

TI Secondary solid **polymer electrolyte batteries** with high thermal stability

IN Tsucha, Kenji; Aoki, Yoshasu

PA Toshiba Battery, Japan

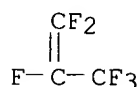
SO Jpn. Kokai Tokkyo Koho, 5 pp.  
 CODEN: JKXXAF

DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09022726	A2	19970121	JP 1995-171135	19950706
AB	The <b>batteries</b> have a cathode contg. a <b>nonaq. electrolyte soln.</b> , an anode contg. a Li intercalating carbonaceous material and the electrolyte soln., and an electrolyte membrane contg. the <b>electrolyte soln.</b> and a <b>polymer</b> retaining the soln.; where the <b>electrolyte</b> membrane has a microporous polyolefin film held between 2 <b>electrolyte-polymer</b> layers.				
ST	lithium <b>battery polymer electrolyte</b> polyolefin film; thermal stability <b>polymer electrolyte</b> lithium <b>battery</b>				
IT	<b>Battery</b> electrolytes (porous polyolefin films in <b>electrolyte</b> membranes contg. <b>nonaq. electrolyte</b> solns. and fluoropolymers for secondary lithium <b>batteries</b> )				
IT	Polyolefins RL: MOA (Modifier or additive use); USES (Uses) (porous polyolefin films in <b>electrolyte</b> membranes contg. <b>nonaq. electrolyte</b> solns. and fluoropolymers for secondary lithium <b>batteries</b> )				
IT	96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> 14283-07-9, Lithium fluoroborate RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (porous polyolefin films in <b>electrolyte</b> membranes contg. <b>nonaq. electrolyte</b> solns. and fluoropolymers for secondary lithium <b>batteries</b> )				
IT	9002-88-4, Polyethylene RL: MOA (Modifier or additive use); USES (Uses) (porous polyolefin films in <b>electrolyte</b> membranes contg. <b>nonaq. electrolyte</b> solns. and fluoropolymers for secondary lithium <b>batteries</b> )				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses) (porous polyolefin films in <b>electrolyte</b> membranes contg. <b>nonaq. electrolyte</b> solns. and fluoropolymers for secondary lithium <b>batteries</b> )				
RN	9011-17-0 HCAPLUS				
CN	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)				

CM 1

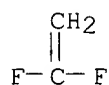
CRN 116-15-4  
 CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



L93 ANSWER 53 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1997:189852 HCAPLUS

DN 126:188472

TI Manufacture of secondary lithium **batteries** using hybrid solid **polymer electrolytes**

IN Tsucha, Kenji; Shimazu, Kenji; Kano, Koji; Katsumata, Tomoo; Kamuragi, Masaaki; Hisamoto, Masakuni

PA Toshiba Battery, Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09022727	A2	19970121	JP 1995-171136	19950706

AB The **batteries**, having an **electrolyte** membrane contg. a**nonaq. electrolyte soln.** and a **polymer**retaining the soln. between a cathode contg. the electrolyte soln. and an anode contg. a Li intercalating carbonaceous material and the electrolyte soln., are prepd. by forming the electrolyte membrane from a soln. of the polymer in a volatile **nonaq.** solvent mixed with a volatile liq.

affinitive to the electrolyte solvent by evapg. the solvent and the liq.

For **batteries** using electrodes contg. the polymer, the cathode

are prepd. from a mixt. of the electrode active mass in a similar manner.

The polymer is preferably a **copolymer** contg. 60-97% cryst.

vinylidene fluoride phase and 3-40% amorphous hexafluoropropylene phase.

ST lithium **polymer electrolyte battery** manuf;fluoropolymer hybrid **polymer electrolyte** lithium**battery**IT **Battery** electrodes(manuf. of hybrid solid **polymer electrolyte** contg.electrodes for secondary lithium **batteries**)IT **Battery electrolytes**(manuf. of hybrid solid **polymer electrolyte**membranes for secondary lithium **batteries**)IT Secondary **batteries**(manuf. of secondary lithium **batteries** using hybrid solid**polymer electrolytes**)

IT 7732-18-5, Water, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (additives in manuf. of hybrid solid **polymer electrolyte** membranes and **electrolyte** contg. electrodes for secondary lithium **batteries**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer**  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (manuf. of hybrid solid **polymer electrolyte** membranes and **electrolyte** contg. electrodes for secondary lithium **batteries**)

IT 67-64-1, Acetone, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (solvent in manuf. of hybrid solid **polymer electrolyte** membranes and **electrolyte** contg. electrodes for secondary lithium **batteries**)

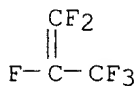
IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride **copolymer**  
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)  
 (manuf. of hybrid solid **polymer electrolyte** membranes and **electrolyte** contg. electrodes for secondary lithium **batteries**)

RN 9011-17-0 HCAPLUS

CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)

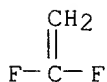
CM 1

CRN 116-15-4  
 CMF C3 F6



CM 2

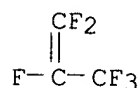
CRN 75-38-7  
 CMF C2 H2 F2



L93 ANSWER 54 OF 55 HCAPLUS COPYRIGHT 2002 ACS  
 AN 1997:184577 HCAPLUS  
 DN 126:188459  
 TI Secondary **polymer electrolyte batteries**  
 IN Tsucha, Kenji; Mitsuishi, Iwao; Tanaka, Masashi  
 PA Toshiba Battery, Japan  
 SO Jpn. Kokai Tokkyo Koho, 6 pp.  
 CODEN: JKXXAF

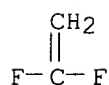
DT Patent  
 LA Japanese  
 IC ICM H01M010-40  
 ICS H01M010-40; B29D031-00; C08L023-16; H01M004-02; H01M004-62  
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
 FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09022737	A2	19970121	JP 1995-171131	19950706
AB	The <b>batteries</b> use cathodes contg. an active mass, a <b>nonaq. electrolyte soln.</b> , and a <b>polymer</b> for retaining the <b>electrolyte soln.</b> ; anodes contg. a Li intercalating carbonaceous material, the <b>electrolyte soln.</b> , the <b>polymer</b> and a rubber insol. in the electrolyte soln.; and an electrolyte layer contg. the <b>electrolyte soln.</b> and the <b>polymer</b> between the electrodes. The rubber is preferably an EPDM rubber.				
ST	<b>polymer electrolyte lithium battery</b> ; lithium <b>battery</b> carbonaceous anode EPDM rubber				
IT	<b>Battery</b> electrodes ( <b>electrolyte</b> retaining <b>polymers</b> for <b>electrolyte</b> contg. electrodes in secondary lithium <b>batteries</b> )				
IT	<b>Battery</b> anodes (lithium intercalating carbon fiber anodes contg. solid <b>polymer electrolyte</b> and EPDM rubber for <b>polymer electrolyte batteries</b> )				
IT	Carbon fibers, uses EPDM rubber RL: DEV (Device component use); USES (Uses) (lithium intercalating carbon fiber anodes contg. solid <b>polymer electrolyte</b> and EPDM rubber for <b>polymer electrolyte batteries</b> )				
IT	Secondary <b>batteries</b> (structure of secondary <b>polymer electrolyte</b> lithium <b>batteries</b> )				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> RL: DEV (Device component use); USES (Uses) ( <b>electrolyte</b> retaining <b>polymers</b> for <b>electrolyte</b> contg. electrodes in secondary lithium <b>batteries</b> )				
IT	9011-17-0, Hexafluoropropylene-vinylidene fluoride <b>copolymer</b> RL: DEV (Device component use); USES (Uses) ( <b>electrolyte</b> retaining <b>polymers</b> for <b>electrolyte</b> contg. electrodes in secondary lithium <b>batteries</b> )				
RN	9011-17-0 HCAPLUS				
CN	1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)				
CM	1				
CRN	116-15-4				
CMF	C3 F6				



CM 2

CRN 75-38-7  
CMF C2 H2 F2



L93 ANSWER 55 OF 55 HCAPLUS COPYRIGHT 2002 ACS

AN 1996:537626 HCAPLUS

DN 125:173346

TI Coated electrodes for **non-aqueous** liquid electrolyte-type **batteries** and supercapacitors, the **batteries** and supercapacitors containing the electrodes, and manufacture of the electrodes

IN Andrieu, Xavier; Josset, Laurence

PA Saft, Fr.

SO PCT Int. Appl., 31 pp.

CODEN: PIXXD2

DT Patent

LA French

IC ICM H01M002-16

ICS H01M004-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9620504	A1	19960704	WO 1995-FR1742	19951227
	W: JP, US				
	RW: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	FR 2729009	A1	19960705	FR 1994-15790	19941228
	FR 2729009	B1	19970131		
	EP 748522	A1	19961218	EP 1995-943284	19951227
	EP 748522	B1	20010103		
	R: DE, FR, GB				
	JP 09510045	T2	19971007	JP 1995-520266	19951227
	US 5811205	A	19980922	US 1996-700381	19960816
PRAI	FR 1994-15790	A	19941228		
	WO 1995-FR1742	W	19951227		

AB Of the electrodes, comprising a 1st electron-conducting porous layer .gtoreq.1 surfaces of which are coated with a 2nd microporous polymeric material, the 2nd coating is obtained by impregnating the 1st layer with a soln. of the polymer, and coagulating the polymer. For the supercapacitors, the 1st coating contains an electrochem. active material selected from activated C and transition metal oxides, and the 2nd coating consists of polyvinylidene fluoride (I). For the **batteries**, the 1st coating contains an electrochem. active material selected from materials capable of being intercalated with alkali metal ions, and the 2nd coating consists of I. The coated electrodes are manufd. by forming

the 1st coating, coating the 1st coating with a film of a soln. of a polymer dissolved in a 1st volatile solvent, contacting the film with a volatile antisolvent miscible with the 1st solvent, and drying the electrode to remove the two solvents. The electrode of a button-type **battery** consisted of a Cu foil coated with a paste contg. .gtoreq.90 wt.% graphite and balance I. The 2nd coating opposite the current collector was formed by applying a soln. contg. 12.5 wt.% I and balance Et3PO4, and the coagulating the polymer in water. The coating was dried at 35 and 120.degree. an had thickness 50 .mu.m and porosity 75%. The electrode was impregnated with an electrolyte soln. consisting of a mixt. of 1.5M Li trifluoromethanesulfonimide and 0.1M LiClO4 in a **nonaq.** solvent consisting of propylene carbonate 20, ethylen carbonate 20, and di-Me carbonate 60%.

- ST electrode coating **battery** supercapacitor; porous carbon coating electrode; polymer porous coating carbon; polyvinylidene fluoride polymer coating; solvent antisolvent polymer coating; **nonaq** electrolyte **battery** electrode; lithium trifluoromethanesulfonimide perchlorite electrolyte
- IT Transition metal oxides  
RL: TEM (Technical or engineered material use); USES (Uses)  
(coatings; porous polymer-coated electrodes for **non-aq.** liq. electrolyte-type **batteries** and supercapacitors)
- IT **Battery** electrolytes  
(**nonaq.**; porous polymer-coated electrodes for **non-aq.** liq. electrolyte-type **batteries** and supercapacitors)
- IT **Batteries**, secondary  
Coating process  
Crosslinking agents  
Solvents  
Wetting agents  
(porous polymer-coated electrodes for **non-aq.** liq. electrolyte-type **batteries** and supercapacitors)
- IT Polyethers, uses  
Polymers, uses  
Polysulfones, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(porous polymer-coated electrodes for **non-aq.** liq. electrolyte-type **batteries** and supercapacitors)
- IT Solvents  
(anti-, porous polymer-coated electrodes for **non-aq.** liq. electrolyte-type **batteries** and supercapacitors)
- IT Electrodes  
(**battery**, porous polymer-coated electrodes for **non-aq.** liq. electrolyte-type **batteries** and supercapacitors)
- IT Inclusion compounds  
RL: TEM (Technical or engineered material use); USES (Uses)  
(intercalation, alkali metal ion-intercalated; porous polymer-coated electrodes for **non-aq.** liq. electrolyte-type **batteries** and supercapacitors)
- IT Alkenes, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(polymers, porous polymer-coated electrodes for **non-aq.** liq. electrolyte-type **batteries** and supercapacitors)
- IT 7440-44-0, Carbon, uses  
RL: TEM (Technical or engineered material use); USES (Uses)  
(activated, coating; porous polymer-coated electrodes for **non**

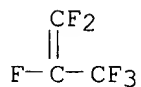
- aq. liq. electrolyte-type **batteries** and supercapacitors)
- IT 9003-39-8, Polyvinylpyrrolidone  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (admixts. with poly(vinylidene fluoride); porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- IT 56-81-5, Glycerin, uses 64-17-5, Ethanol, uses 75-05-8, Acetonitrile, uses 107-21-1, Ethyleneglycol, uses 108-32-7, Propylene carbonate 141-78-6, Ethyl acetate, uses 7732-18-5, Water, uses 30899-19-5, Pentanol 35296-72-1, Butanol  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (antisolvent; porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- IT 7440-50-8, Copper, uses  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (electrode; porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- IT 90076-65-6  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (**nonaq.** electrolyte solns. contg. lithium perchlorate and; porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- IT 7791-03-9, Lithium perchlorate  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (**nonaq.** electrolyte solns. contg. lithium trifluoromethanesulfonimide and; porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- IT 67-64-1, Acetone, uses 127-19-5, Dimethylacetamide  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- IT 9002-86-2, Poly(vinyl chloride) 9004-35-7, Cellulose acetate 9011-14-7, Polymethylmethacrylate 9011-17-0, Hexafluoropropene-vinylidene fluoride **copolymer** 24937-79-9, Poly(vinylidene fluoride) 25213-24-5, Vinyl alcohol-vinyl acetate **copolymer** 25684-76-8, Tetrafluoroethene-vinylidene fluoride **copolymer**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- IT 67-68-5, DMSO, uses 68-12-2, Dimethylformamide, uses 75-09-2, Dichloromethane, uses 78-40-0, Triethyl phosphate 108-94-1, Cyclohexanone, uses 680-31-9, Hexamethylphosphoramide, uses 872-50-4, N-Methylpyrrolidone, uses  
 RL: NUU (Other use, unclassified); USES (Uses)  
 (solvent; porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- IT 9011-17-0, Hexafluoropropene-vinylidene fluoride **copolymer** 24937-79-9, Poly(vinylidene fluoride) 25684-76-8, Tetrafluoroethene-vinylidene fluoride **copolymer**  
 RL: TEM (Technical or engineered material use); USES (Uses)  
 (porous polymer-coated electrodes for **non-aq. liq. electrolyte-type batteries** and supercapacitors)
- RN 9011-17-0 HCAPLUS
- CN 1-Propene, 1,1,2,3,3,3-hexafluoro-, polymer with 1,1-difluoroethene (9CI)  
 (CA INDEX NAME)



CM 1

CRN 116-15-4

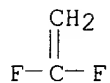
CMF C3 F6



CM 2

CRN 75-38-7

CMF C2 H2 F2



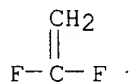
RN 24937-79-9 HCAPLUS

CN Ethene, 1,1-difluoro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 75-38-7

CMF C2 H2 F2



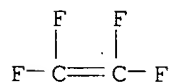
RN 25684-76-8 HCAPLUS

CN Ethene, tetrafluoro-, polymer with 1,1-difluoroethene (9CI) (CA INDEX NAME)

CM 1

CRN 116-14-3

CMF C2 F4



CM 2

CRN 75-38-7

CMF C2 H2 F2

